FE242

Diagram No. 5532

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey Field Examination

Field No. RA-10-1-83

Office No. FE-242

LOCALITY

State California

General Locality San Francisco Bay

Locality San Francisco North to Point San Pablo

1983

CHIEF OF PARTY
CAPT R.J. Land

LIBRARY & ARCHIVES

DATE October 22, 1985

FE242

☆U.S. GOV. PRINTING OFFICE: 1980—766-230

Area 3
Chts

18649 Appd
18650
18654
18652SC A-
B- inset 5
C-
D- inset 6

to Sign off see "Records of Application"

NOAA FORM 77-28 (12) | U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | REGISTER NO.

HYDROGRAPHIC TITLE SHEET

FE-242

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

RA-10-1-83

State California

General locality San Francisco Bay

Locality San Francisco North to Point San Pablo

Scale 1:10,000 Date of survey March 18 - May 3, 1983

Instructions dated February 4, 1983 Project No. OPR-L123-RA-83

Vessel NOAA Ship RAINIER, Launches RA-3 (2123), RA-4 (2124), RA-5 (2125), RA-6 (2126)

Chief of party CAPT R. J. Land, NOAA

Surveyed by LT S. Ludwig, LTJG M. Mathwig, ENS R. Koehler, ENS J. Judson, ENS B. Postle, ENS W. Logue, ENS K. Barton, SST R. Hastings

Soundings taken by echo sounder, hand lead, ~~pole~~ XXX Ross Fineline Fathometer

Graphic record scaled by RAINIER Survey Department

Graphic record checked by RAINIER Survey Department

Verification ~~Protracted~~ by J. Shofner, T. Jones Automated plot by PMC Xynetics Plotter

Evaluation ~~Verification~~ by J. S. Green

Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW

REMARKS:

Marginal notes in black are by the evaluator.

Separates have been removed and filed with the survey records.

Position and excess sounding overlays are filed with the survey records.

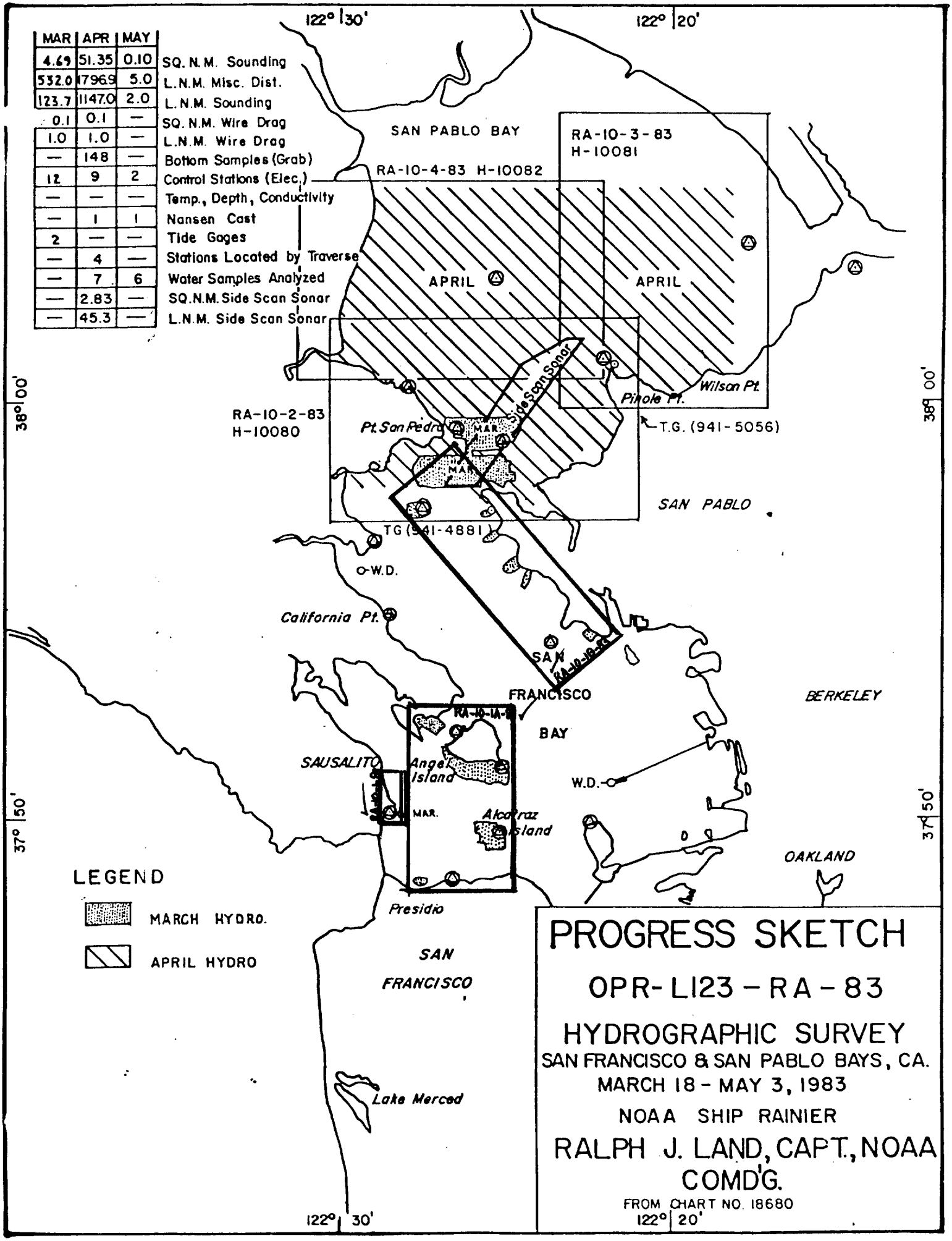
STANDARDS CKD 10-30-85 Ebay

AWOIS and SURF ✓ 11/85 RWD

KWW 8/25/92

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U. S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6



MAR	APR	MAY	
4.69	51.35	0.10	SQ. N.M. Sounding
532.0	1796.9	5.0	L.N.M. Misc. Dist.
123.7	1147.0	2.0	L.N.M. Sounding
0.1	0.1	—	SQ. N.M. Wire Drag
1.0	1.0	—	L.N.M. Wire Drag
—	148	—	Bottom Samples (Grab)
12	9	2	Control Stations (Elec.)
—	—	—	Temp., Depth, Conductivity
—	1	1	Nansen Cast
2	—	—	Tide Gages
—	4	—	Stations Located by Traverse
—	7	6	Water Samples Analyzed
—	2.83	—	SQ.N.M. Side Scan Sonar
—	45.3	—	L.N.M. Side Scan Sonar

PROGRESS SKETCH

OPR-L123-RA-83

HYDROGRAPHIC SURVEY

SAN FRANCISCO & SAN PABLO BAYS, CA.

MARCH 18 - MAY 3, 1983

NOAA SHIP RAINIER

RALPH J. LAND, CAPT., NOAA

COMD'G.

FROM CHART NO. 18680

A. PROJECT

These field examination hydrographic surveys were conducted in accordance with Project Instructions OPR-L123-RA-83, San Francisco Bay and San Pablo Bay, California, dated February 4, 1983 and Supplements: Change No. 1, dated March 11, 1983 and Change No. 2, dated March 29, 1983, and Change No. 3, dated July 27, 1983.

B. AREA SURVEYED

These field examinations included various areas within San Francisco Bay from 37°48.25'N to 37°58.9'N. One additional field examination was conducted: #19 - a pile at 37°44'45.0"N, 122°28'18.0"W. The survey was conducted between March 18, 1983 and May 3, 1983.

C. Sounding Vessel

All soundings were obtained using the following hydrographic launches: RA-3 (2123), RA-4 (2124), RA-5 (2125), and RA-6 (2126). Launch RA-3 was also used to collect side scan sonar data. No unusual sounding vessel configurations or problems were encountered.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All information contained in this section is applicable to RA-10-1-83. Sounding equipment is discussed as well as correctors which include sound velocity, launch draft, launch settlement and squat, instrument corrections for blanking, and phase and initial drift errors.

Sounding Equipment

Each launch was equiped with Ross Fineline Fathometer systems. The systems included the following Ross components: model 400 transceivers, model 5000 analog trace recorders, model 6000 digitizers and 100 kHz transducers. The serial numbers of the components are summarized in Table I.

TABLE I
Echo Sounding Component Serial Numbers

Launch	2123	2124	2125	2126
Transceiver	1041	1040-6	1042	1080
Analog	1042	1070/ 1040-6	1071	1040-6/ 1070
Digitizer	1041	1080	1042	1040-3

Multiple analog recorders were utilized in RA-4 and RA-6 due to occasional failure of the principal recorders (#1070 and #1040-6, respectively). The principal recorders were used except on JD89 when RA-4 used #1040-6 and RA-6 used #1070. ✓

RA-3 was equipped with a Klein Side Scan Sonar system (S/N 254). The side scan system was used for investigation of AWOIS Item 50572. ✓

Sound Velocity Correctors

A Nansen cast was performed within the survey area to determine sound velocity corrections. The cast was conducted on April 15, 1983 at $37^{0}50.8'$N, $122^{0}25.0'$W. ✓

The standard velocity correctors for this survey were determined by graphing the actual depths (minus velocity corrections) versus velocity correction and scaling off depths that corresponded to standard correction intervals (see Sec. 4.9.5.2.6, Hydrographic Manual, Fourth Edition, 1976). Copies of both the graph and the velocity table (Velocity Table No.1) are provided in the separates following the text. All smooth field sheets for this survey were plotted using these velocity correctors. Graph and velocity table moved to cahier.

Launch Draft Correctors

Corrections for launch draft were determined from standard bar checks. Bar checks were performed twice daily except when conditions prevented acquisition of accurate bar check data (see Sec. 1.5.2, Hydrographic Manual, Fourth Edition, 1976). ✓

All smooth field sheets were plotted using a TRA value of 1.8 feet. ✓

Launch Settlement and Squat Correctors

Settlement and squat tests were conducted at Shilshole Bay Marina in Puget Sound, Washington on February 14 and 15, 1983. A list of the final correctors is provided in the separates following the text. The smooth field sheets were plotted without these correctors. Smoothsheet plotted with correction. See printout for final correctors.

Sounding Instrument Correctors

During survey operations the blanking depth was set to a value shoaler than the shoalest bottom expected and was adjusted as the depth changed. Corresponding analog depths were substituted for missing or erroneous digital soundings as part of standard scanning procedures. ✓

The initial trace on the analog recorders was monitored to prevent errors caused by a drifting initial. Whenever the initial was found to be off during scanning, inserted depths (e.g. missed depths, peaks, deeps) were scaled off accordingly. ✓

Phase calibrations were performed in accordance with Section AH1.2 of the Hydrographic Manual, (Fourth Edition, 1976) and PMC OPORDER, Appendix B. ✓

Manual Soundings

Manual soundings were obtained by the use of hand-held lead lines where required. Depth markings on these lines were compared with a steel measuring tape prior to survey operations and were found to be accurate. ✓

E. HYDROGRAPHIC SHEETS

Field sheets were prepared using the PDP 8/e complot system on board the RAINIER. All sheets were based on a modified transverse mercator projection. A list of parameters used to define the hydrographic sheets is attached. There are two 1:10,000 scale smooth field sheets, six 1:2,500 scale expansion sheets, and one 1:5,000 scale expansion sheet included in this survey. The following listing indicates which field examination items are included on each sheet: See Eval Report, Sect I.

Field Examination Areas

Sheet	Change No.1	AWOIS
RA-10-1A-83	#9-16	#50562-50563, 50572
Expansion #4 (1:2500)	#10	--
Expansion #5 (1:2500)	#10	--
Expansion #6 (1:2500)	#10	--
Expansion #7 (1:5000)	--	#50567-50568
RA-10-1B-83	#1-7	#50551-50560, 50570
Expansion #1 (1:2500)	#1	--
Expansion #2 (1:2500) (Semi-smooth only)	#4	--
Expansion #3 (1:2500)	#5	--

The shoalest sounding of each expansion sheet development has been transferred to the 1:10,000 scale smooth sheet when applicable. All field records will be sent to the Pacific Marine Center, Seattle, Washington for verification. ✓

F. CONTROL STATIONS

No new horizontal control stations were established for this survey. A copy of the Master Station List is provided in the separates following the text. Recovered stations are included in the Horizontal Control Report for OPR-L123-RA-83.

G. HYDROGRAPHIC POSITION CONTROL

Range/Azimuth, Range/Range, and "See Field Sheet" methods were used for hydrographic position control. Positioning instruments included Motorola Mini-Ranger III systems and Wild theodolites. The tables below summarize the location of all Mini-Ranger mobile and shore equipment.

TABLE I

Mini-Ranger Mobile Equipment

Vessel	Console	R/T S/N
2123	720	2710
2124	30269	B1388
2125	715	1660
2126	711	1646

TABLE II

Mini-Ranger Shore Equipment

Code	Transponder S/N	Station#
A	1645	103,115,150,207,209
B	4951	104,112,113,151,207,212
C	1628	207,303
E	911721	101
F	911711	105,111,112
1	C1680	104,115,151,207
2	31106	104,207,209,303

Mini-Ranger Calibration and System Check

Initial Mini-Ranger baseline calibration for these codes were conducted in Seattle, Washington on February 24, 1983 and March 7, 1983. Vessel 2125 had its R/T unit replaced after work was completed on this sheet and no ending calibration was possible for its system.

Ending baseline calibrations for all systems were performed on Mare Island, California on May 3, 1983. Only initial correctors were used to plot the smooth field sheet. The initial baseline calibration for each R/T console pair and transponder combination also determined minimum signal strength cutoff values for each system. Electronic corrector abstracts are included with this report in the separates to the text. For more information concerning initial and ending calibrations, refer to Electronic Control Report OPR-L123-RA-83. ✓

Sextant and static critical system checks were used to confirm baseline correctors for this survey. These checks were made daily. ✓

Mini-Ranger Performance

All shore stations were positioned on existing Third Order, Class I or better geodetic stations. Power was normally supplied by two 12-volt batteries connected in series. On one station power was supplied by an AC/DC transformer. Infrequent problems with eratic Mini-Ranger rates made data acquisition difficult at times. When unstable rates were encountered, numerous transponders were established in the survey area to permit selection of the most stable pair. Overall, shore transponder units and all mobile equipment performed well with few problems. ✓

H. SHORELINE

Discussion of shoreline is included in the attached field examination item description. See Eval Report, Sect 2.

I. CROSSLINES

Discussion of crossline comparisons are included in the attached field examination descriptions. See Eval Report Sect 3

J. JUNCTION

Discussion of junction comparisions are included in the attached field examination descriptions. See Eval Report Sect 5

K. COMPARISON WITH PRIOR SURVEYS

Discussion of prior survey comparisons are included in the attached field examination descriptions. See Eval Report Sect 6

L. COMPARISON WITH THE CHART

Discussion of chart comparisons are included in the attached field examination descriptions. See Eval Report, Sect 7

M. ADEQUACY OF SURVEY

The field examinations addressed in this report have been resolved sufficiently to supplement prior surveys for charting purposes.

See Eval Report, Sect 9

N. AIDS TO NAVIGATION

The floating aids listed in the following table were positioned during item investigations on RA-10-1-83. All aids served the purpose for which they were intended.

✓

The following fixed aids were utilized during the course of the survey:

Signal No.	Fixed Aid	Light List No.
#315	Sausalito Channel Light 2	#590
#103	Raccoon Strait Light 4 (Point Stuart Lighthouse)	#585
#101	Alcatraz Light	#578
#200	Anita Rock Light	#572
#207	San Francisco West Yacht Harbor Light 2	#574
#303	Point Blunt Light	#582
#117	East Brother Island Light	#763
#115	San Francisco Bay North Channel Light 17	#756
#214	Southampton Shoal Channel Light 2-A	#726.10
#212	Richmond Harbor Jetty Daybeacon	No #
#213	Richmond Harbor Approach Range Front Light	#730
#102	Cone Rock Light	#589
#111	Treasure Island North End Light 6	#707.30
#202	Lime Point Light	#570
#318	Yellow Bluff Light	#571
#322	Berkeley Breakwater Light 2	#712

No positional discrepancies were observed for any of the fixed aids listed above. In an attempt to static calibrate the Mini-Ranger off of Richmond Harbor Channel Light 10 (LL #742) its current NGS listing position (37°54'13.317" N, 122°22'30.333" W) was found to be in error. The light is charted PA, the FFAID position 37°54'13.7" N, 122°22'28.5" W lies within 22.1 meters of the hydrographic position (DP #5000, JD 085) determined during this survey. Evidently this light was relocated since the NGS position was determined. The light is adequately positioned for charting and the "PA" should be removed. (Lat 37°54'13.40"N, Long 122°22'29.34"W) See Eval Rpt Sect 9. Removal of PA left to discretion of the compiler.

Charted position discrepancies were observed for Corinthian Harbor Light 1 (LL #586.1) and Lt. 2 (LL #586.2). The FFAID positions for both of these lights plot 40-50 m west of the breakwater and dock

FLOATING AIDS TO NAVIGATION

RA-10-1-83

Floating Aid/ Characteristic	Pos. #	Location	Light List	Light List G.P.	Inverse Distance	FFAID G.P.	Inverse Distance
ALCATRAZ BELL BUOY RED AND BLACK HORI- ZONTALLY BANDED	#3000 JD 077	37°49'39.36" N 122°25'37.81" W	No #	37°49.7' N 122°25.6' W	92.6 m		
BUOY "1" BLACK CAN	#3036 JD 077	37°49'16.10" N 122°25'17.79" W	No #	N/M 5/83 37°49'16.6" N 122°25'17.6" W	16.1 m		
RACCOON STRAIT LIGHTED BUOY 2 RED NUN	#3214 JD 083	37°51'10.97" N 122°26'32.92" W	#584	37°51.2' N 122°26.6' W	81.7 m	37°57'10.10" N 122°26'33.13" W	27.3 m
BELVEDERE COVE LIGHTED BUOY 1 BLACK CAN	#4059 JD 083	37°52'17.25" N 122°27'13.25" W	#586	37°52.3' N 122°27.2' W	38.3 m	37°52'14.80" N 122°27'13.00" W	75.8 m
RACCOON STRAIT LIGHTED BUOY 3 BLACK CAN	#4144 JD 085	37°51'39.54" N 122°27'22.61" W	#587			37°51'39.73" N 122°27'22.12" W	13.3 m
NORTH CHANNEL BUOY 3 BLACK CAN	#4272 JD 088	37°51'02.83" N 122°24'59.67" W	No #	37°51.0' N 122°25.0' W	87.6 m	37°51'02.00" N 122°24'59.00" W	30.4 m

on which they are located.

The following shoreline scaled (1:10,000) positions: Light 1 (on dock) at 37°52'20.0" N, 122°27'17.1" W, Light 2 (on breakwater) at 37°52'18.5" N, 122°27'16.7" W, provides an adequate charting position.

See Eval Report, Sect 9 & 7 Eval Supp 9

The following floating aids to navigation: Southampton Shoal Channel Lighted Buoy 1 (LL #725), Southampton Shoal Channel Lighted Buoy 2 (LL #726), and Richmond Harbor Channel Lighted Buoy 5 (LL #734) are charted (Chart #18649) as fixed aids and should be changed to Buoys as per Light List Vol. III, 1983.

O. STATISTICS ✓

Survey Launch		Linear Nautical Miles of Hydrography	Number of Positions
RA-3 (2123)		26.8 nm	387
RA-4 (2124)		44.6 nm	421
RA-5 (2125)		7.5 nm	116
RA-6 (2126)		18.1 nm	461
	TOTAL	97.0 nm	1385

Tide Stations	2
Velocity Casts	1
LNM Sidescan Sonar	3

P. MISCELLANEOUS

No anomalous currents were reported or observed during this survey. ✓

Q. RECOMMENDATIONS

Revision photography is recommended in the vicinity of Corte Madera Creek, Belvedere Cove including Corinthian Harbor and Castro Point. These areas have changed significantly and continue to develop. Particularly, photo positions should be obtained for Corinthian Harbor Lights 1 and 2. Concur

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished in accordance with the Hydrographic Manual, (Fourth Edition), Manual of Automated Hydrographic Surveys, the PMC OPORDER, Hydrographic Survey Guidelines and the Hydrographic Data Requirements for 1983. ✓

Soundings and positions were taken by a hydrologger ASI logger and a hydroplot system using program RALOGD and RK 112. There are daily ✓

master tapes and corresponding corrector tapes which include the TRA for the launches and electronic control baseline correctors for Mini-Ranger consoles and R/T units and all depth corrections. Velocity tapes were generated from Nansen cast data. The following is a list of all computer programs and version dates used for data acquisition or processing:

PDP 8/e Program	Version Date	Checksum
RALOGD Hydrologger	03/11/83	---
RK 112 Range/Range, Hyperbolic Hydroplot	08/04/81	2352
RK 201 Grid, Signal, and Lattice Plot	04/18/75	1443
RK 211 Range-Range Non-Real Time Plot	02/02/81	4032
RK 212 Visual Station Table Load	04/01/74	5141
RK 215 Visual Non-Real Time Plot	02/11/81	5174
RK 216 Range-Azimuth Non-Real Time Plot	02/09/81	4356
RK 300 Utility Computations	10/21/80	0021
RK 330 Reformat and Data Check	05/04/76	3460
PM 360 Electronic Corrector Abstract	02/02/76	1500
RK 407 Geodetic Inverse/Direct Computation	09/24/78	2745
AM 500 Predicted Tide Generator	11/10/72	1634
RK 530 Layer Corrections for Velocity	05/10/76	7336
RK 561 H/R Geodetic Calibration	12/01/82	3724
AM 602 Elinore - Line Oriented Editor	12/08/82	4371
RK 606 Tape Duplicator	08/22/74	5603
AM 607 Self-Starting Binary Loader	08/10/80	5227
RK 610 Binary Tape Duplicator	12/01/82	5264
RK 612 Line Printer List	03/22/78	0177
DA 903 Diagnostic - Instruction Timer	02/27/76	3470
RK 905 Hydroplot Controller Checkout	03/18/81	5426
RK 935 Hydroplot Hardware Tests	03/15/82	1732
RK 950 Hardware Tests (Documentation Only)	06/02/75	----

The Wang Series 700, the HP 97 and HP 9815A programmable calculators were used to compute geographic positions of electronic control stations and visual signals for calibrations.

S. REFERRAL TO REPORTS

The following reports contain information related to this survey:

Echo Sounding Report	OPR-L123-RA-83
Electronic Control Report	OPR-L123-RA-83
Horizontal Control Report	OPR-L123-RA-83
Coast Pilot Report	OPR-L123-RA-83

Respectfully submitted,

Susan J. Ludwig
LT, NOAA

1847z bmc de wtef 1 of 1

PMC	063385 MHz
gn	06 MAY 83 1847Z

rttuzyuw ruhptef0044 1261801-uuuu--ruhpsuu.
znr uuuuu
r 061801z may 83
fm noaas rainier
to ccgdtwelve alameda ca
info dir pmc noaa seattle wa
noaa rockville md n/cg2
acct cm vcaa
bt
unclas
ra-pmc-017.
request the following dangers to navigation be published in the local notice to mariners for noaa charts 18649,18650,18652, and 18654.indicated least depths are reduced to mllw based on predicted tides.
1. a 30 foot shoal on the outer limit of the southbound san francisco bay traffic lane in san pablo strait at 38/00/55n, 122/24/25w. (18652, 18654)
2. shoaling to 30 ft in the area between sisters rock and san pablo bay channel light 5. (18652, 18654)
3. a 16 foot depth 200 meters south of angel island at 37/51/10.0n, 122/25/56.0w (18649,18650,18652)
4. a visible concrete obstruction 300 meters north of castro point at 37/56/21.0n, 122/25/01.0w (18649)
5. a submerged obstruction near castro point with a least depth of 9 feet at 37/56/14.1n, 122/24/52.6w (18649)
6. a previously visible pile east of point pinole is now submerged 1 foot at 38/00/41.2n, 122/21/37.6w (18652,18654)
7. a 3 foot shoal east of point pinole at 38/00/53.0n, 122/21/25.5w (18652,18654)
8. visible pile east of pt pinole at 38/00/25.5n, 122/20/27.0w (18652, 18654)
9. a dead head lodged in the bottom and awash at most stages of tide near pt san pablo at 37/58/06.8n, 122/25/30.0w in 6 feet of water (18649,18652,18654)
10. a visible rock in san rafael bay at 37/58/31.2n, 122/28/23.0w (18649, 18654)
bt
#0044

nnnn

k

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

JUL 25 1983

Commander (OAN)
Twelfth Coast Guard District
630 Sansome Street
San Francisco, CA 94126

Dear Sir:

The following dangers to navigation were discovered during the preprocessing examination of field examination FE-242, California, San Francisco Bay, San Francisco north to Point San Pablo.

1. A rock is covered 6 feet at predicted MLLW on Charts 18649, 18650 and 18652 at latitude 37°50'12.6"N, longitude 122°28'10.8"W; 110 meters bearing 80 degrees true from Yellow Bluff Light (LL #571).

2. An obstruction is covered 9 feet at predicted MLLW on Charts 18649, 18652, and 18654 at latitude 37°57'21.86"N, longitude 122°25'33.10"W; 940 meters 144 degrees true from East Brother Island Light (LL #763).

3. A 13-foot depth at predicted MLLW on Charts 18649 and 18652 is at latitude 37°54'21.0"N, longitude 122°22'17"W; 1840 meters 97 degrees true from the Point Richmond Fog Signal (LL #735).

Any questions regarding the above items may be directed to Capt. Ned C. Austin, Chief, Nautical Chart Branch, telephone (206) 442-4764.

Sincerely,

Charles K. Townsend
Rear Admiral, NOAA
Director, Pacific Marine Center

A

APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
RA-10-1-83
FIELD EXAMINATIONS

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, and the Instruction Manual for Automated Hydrographic Surveys. The data was examined daily during the execution of the survey.

The boatsheet and the accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.

Ralph J. Land
Captain, NOAA
Commanding

MASTER STATION LIST
OPR-L123-RA-83, SAN FRANCISCO BAY

FINAL VERSION

```
101 3  37 49 34672 122 25 15758  250 0065 000000
ALCATRAZ LIGHTHOUSE 1910                NGS LISTING

102 0  37 51 50727 122 28 07117  250 0005 000000
CONE ROCK LIGHT                         NGS LISTING

103 2  37 51 40053 122 26 42297  250 0024 000000
POINT STUART LIGHTHOUSE                 NGS LISTING

104 3  37 50 06483 122 28 17136  250 0034 000000
RANGE 1931                              NGS LISTING

105 6  37 52 06596 122 26 15679  250 0000 000000
IONE                                    ADJUSTED FIELD G.P.

111 2  37 49 59877 122 22 17071  250 0009 000000
TREASURE ISLAND NORTH END LIGHT 6       NGS LISTING

112 3  37 56 42339 122 28 48272  250 0000 000000
QUENTIN 1979                            ADJUSTED FIELD G.P.

113 3  37 54 55057 122 28 25116  250 0000 000000
PARADISE 1979                           ADJUSTED FIELD G.P.

114 3  37 55 42026 122 28 02054  250 0000 000000
CORTE MADERA CHAN LT 2                  NGS LISTING

115 3  37 57 26104 122 27 21596  250 0000 000000
SAN FRANCISCO BAY N CHAN LT 17          NGS LISTING

116 3  37 53 39592 122 26 54648  139 0000 000000
SAN FRANCISCO BAY N CHAN LT 7           NGS LISTING

117 3  37 57 47807 122 25 56701  139 0000 000000
EAST BROTHER ISLAND LIGHT               ADJUSTED FIELD G.P.

150 3  37 58 52626 122 24 59882  250 0005 000000
SAN PABLO BAY LT 4                      NGS LISTING

151 3  37 59 17835 122 26 25887  250 0000 000000
SISTER 1941                             NGS LISTING
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153 3  38 00 43002 122 24 50994  139 0005 000000
SAN PABLO BAY CHAN LT 5              NGS LISTING

157 3  38 02 56998 122 25 15400  250 0005 000000
PETALUMA RIVER ENT LT 2              NGS LISTING

200 3  37 48 30219 122 27 08821  139 0006 000000
ANITA ROCK LIGHT                     NGS LISTING

202 1  37 49 31877 122 28 38029  139 0010 000000
LIME POINT LIGHT  (REBUILT)          NGS LISTING

207 3  37 48 31752 122 26 20304  250 0006 000000
SAN FRANCISCO WEST YACHT HARBOR LIGHT ADJUSTED FIELD G.P.

209 3  37 48 21971 122 27 10136  250 0000 000000
TURK 1948 RM 1                       NGS LISTING

210 3  37 48 38174 122 28 34290  139 0015 000000
FORT POINT LIGHTHOUSE                NGS LISTING

212 3  37 54 13721 122 23 27581  250 0000 000000
RICHMOND HRB JETTY DBCN              NGS LISTING

213 3  37 54 02959 122 23 25611  139 0000 000000
RICHMOND HRB APP RNG F LT            NGS LISTING

214 3  37 54 45750 122 25 11394  139 0000 000000
SOUTHAMPTON SHOAL CHAN LT 2A         NGS LISTING

303 1  37 51 11836 122 25 05196  250 0018 000000
POINT BLUNT LIGHT                    ADJUSTED FIELD G.P.

309 3  37 47 42826 122 24 06079  139 0000 000000
TRANS-AMERICA BUILDING               NGS LISTING

313 4  37 48 34968 122 21 51409  139 0000 000000
USCG VESSEL TRAF SYS RADAR YBI       NGS LISTING

315 3  37 51 21528 122 28 03381  139 0005 000000
SAUSALITO CHANNEL LIGHT 2            ADJUSTED FIELD G.P.

318 3  37 50 11766 122 28 16033  139 0023 000000
YELLOW BLUFF LIGHT                   ADJUSTED FIELD G.P.

322 1  37 50 52098 122 21 34099  139 0005 000000
BERKELEY BREAKWATER LIGHT 2          ADJUSTED FIELD G.P.

338 3  37 48 28021 122 19 11606  139 0000 000000
OAKLAND NAVY DEPOT CHECK TANK        NGS LISTING
```

NOAA FORM 76-40 (8-74)

Replaces C&GS Form 567.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

ORIGINATING ACTIVITY
- [x] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [x] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA SHIP RAINIER	CALIFORNIA	SAN FRANCISCO BAY	6/4/83

The following objects HAVE [x] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-L123-RA-83	N.A.	N.A.	N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	CORINTHIAN HARBOR LIGHT 1		20.00		17.10		F-SCALED	18649
	1983 LL# 586.10 (ON DOCK)	37 52	617	122 27	418		3/26/83	18652
LIGHT	CORINTHIAN HARBOR LIGHT 2		18.50		16.70		F-SCALED	18649
	1983 LL# 586.20 (ON BREAKWATER)	37 52	570	122 27	408		3/26/83	18652
	THE ONLY POSITIONS AVAILABLE							
	ON THESE LIGHTS WERE FROM							
	THE FFAID. THE FFAID							
	POSITIONS DO NOT COINCIDE							
	WITH THE SHORELINE LIGHT							
	LOCATIONS ON THE CHART.							
	THE ABOVE POSITIONS ARE							
	SCALED FROM THE LARGEST							
	SCALE SHORELINE SOURCE							
	AVAILABLE, H-9793 (1:10,000).							
	IT IS RECOMMENDED THAT							
	OFFICE PHOTOGRAMMETRIC							
	POSITIONS BE OBTAINED							
	FOR THESE LIGHTS.							

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	RICHARD KOEHLER, ENS. NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	SUSAN LUDWIG, LT. NOAA	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

ORIGINATING ACTIVITY
- [x] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [x] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): NOAA SHIP RAINIER
STATE: CALIFORNIA
LOCALITY: SAN FRANCISCO BAY
DATE: 6/4/83

The following objects HAVE [x] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-1123-RA-83	N.A.	N.A.	N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	(SOUTHAMPTON SHOAL CHAN LT 1) 1983 LL # 725	37 54	16.297	122 25	18.509		F-VIS-V 3/23/83	18649 18652
LIGHT	(SOUTHAMPTON SHOAL CHAN LT 2) 1983 LL # 726	37 54	18.740	122 25	09.421		F-VIS-V 3/23/83	18649 18652
LIGHT	(RICHMOND HRB CHAN LT 5) 1983 LL # 734	37 54	29.675	122 23	54.364		F-VIS-V 3/23/83	18649 18652
	ALL OF THE ABOVE FIXED AIDS HAVE							
	BEEN REPLACED WITH - or charted							
	LIGHTED BUOYS, SAME							
	LIGHT LIST NUMBERS							

RESPONSIBLE PERSONNEL		
T OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	STANLEY IWAMOTO, LT. NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	N.A.	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1030 Region 6

Field Tide Note

Field tide reduction of soundings for field examinations RA-10-1-83 was based on predicted tides from San Francisco (Golden Gate), California. Corrections were obtained from Preliminary Tidal Zoning OPR-L123-RA-83. The predicted tides were derived using program AM500.

One subordinate tide station provided data for field examination RA-10-1-83. An ADR tide gage was installed at the historical gage site on the Standard Oil Company fuel pier at Point Orient, California (941-4881), Lat. 37°57.5'N, Long. 122°25.5'W.

The gage was installed on March 24, 1983 and removed on May 2, 1983. The existing floatwell from the 1979 installation by the NOAA Ship McARTHUR was raised for cleaning and inspection. It was reinstalled on an adjacent piling which was a more suitable location for the gage and staff. The floatwell and staff were attached to the pier piling with lag bolts.

The gage at Point Orient operated well throughout the period of field examinations. The gage began to lose time due to low battery voltage after all hydrography was completed in the area.

Three permanent benchmarks were recovered as described and leveled to during the installation of this tide gage. A fourth benchmark (San Pablo BM2 1917) was searched for but not recovered. During final leveling, San Pablo BM2 1917 was found and connected with the other three marks.

Initial levels for the Point Orient gage were run on March 25 and 26, 1983. Final levels were run on May 2, 1983. Initial and final levels showed excellent agreement, with no indication of tide staff movement.

The time meridian used for records annotation was 0° (UTC).

February 13, 1984

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: L123

HYDROGRAPHIC SHEET: FE - 242

Locality: Upper San Francisco Bay, California

Time Period: March 18 - April 26, 1983

Tide Station Used: 941-4290, San Francisco, California

Plane Of Reference (Mean Lower Low Water): 5.77 Ft.

Height Of Mean High Water Above Plane Of Reference: 5.8 Ft.

Remarks: Recommended Zoning:

A) South of $37^{o}59.0'$ to $37^{o}57.0$, apply +50 minute time correction and x1.04 range ratio.
B) South of $37^{o}57.0'$ to $37^{o}55.0'$, apply a +35 minute time correction and x1.03 range ratio.
C) South of $37^{o}55.0'$ to $37^{o}48.0'$
   1. East of $122^{o}25.0'$, apply +25 minute time correction and x1.03 range ratio.
   2. West of $122^{o}25.0'$ to $122^{o}30.0'$
      a. South of $37^{o}55.0'$ to $37^{o}53.0'$, apply a +25 minute time correction and x1.03 range ratio.
      b. South of $37^{o}53.0'$ to $37^{o}51.0'$, apply +15 minute time correction.
      c. South of $37^{o}51.0'$, zone direct.

James R. Hubbard
Chief, Tidal Datum Section

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

SURVEY NUMBER

FE-242

Name on Survey San Francisco North to Point San Pablo	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
Alcatraz Island	X									1
Alcatraz Shoal	X									2
Angel Island	X									3
Belvedere Cove	X									4
California (title)	X									5
Castro Point	X									6
Corte Madera Creek	X									7
Loch Lamond Marina				X						8
Molate Point	X									9
Paradise Cove	X									10
Point Blunt	X									11
Point Blunt Rock				X						12
Point Cavallo	X									13
Point Knox	X									14
Point Knox Shoal	X									15
Point Orient	X									16
Point Potrero	X									17
Point San Pablo (title)	X									18
Point San Quentin	X									19
Presidio	X									20
San Francisco (title)	X									21
San Francisco Bay (title)	X									22
San Rafael Creek	X									23
Sausalito	X									24
The Brothers	X									25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

SURVEY NUMBER

FE-242

Name on Survey: San Francisco North to Point San Pablo	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
Tiburon	X									1
Yellow Bluff	X									2
										3
										4
										5
										6
										7
										8
										9
										10
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										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H) (9-83) | U.S. DEPARTMENT OF COMMERCE | REGISTRY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

FE-242

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEETS (in Descriptive Rpt.)		SMOOTH OVERLAYS: POS., ARC, EXCESS (in Accordian Files)	
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	5

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	3					
ENVELOPES						
VOLUMES	1					
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List): Hor. Control Correction to Echo Sounding Electronic Control and

NAUTICAL CHARTS (List): Coast Pilot Reports for L123-RA-83

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS VERIFICATION	AMOUNTS EVALUATION	AMOUNTS TOTALS
POSITIONS ON SHEET			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS VERIFICATION	TIME-HOURS EVALUATION	TIME-HOURS TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL	7		7
VERIFICATION OF POSITIONS	119		119
VERIFICATION OF SOUNDINGS	248		248
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	147		147
COMPARISON WITH PRIOR SURVEYS AND CHARTS		104	104
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		93	93
GEOGRAPHIC NAMES			
OTHER* Digitization			38
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	521	197	756

Pre-processing Examination by W. Wert	Beginning Date 9/6/83	Ending Date 9/6/83
Verification of Field Data by J. Shofner, T. Jones	Time (Hours) 521	Ending Date 5/15/85
Verification Check by J. Stringham, B. Olmstead	Time (Hours) 64	Ending Date 5/15/85
Evaluation and Analysis by J. Green	Time (Hours) 197	Ending Date 9/16/85
Inspection by D. Hill	Time (Hours) 23	Ending Date 9/20/85

☆ U.S. GOVT. PRINTING OFFICE 1983: 764-006/6061

PACIFIC MARINE CENTER

EVALUATION REPORT

FE-242

1. INTRODUCTION

FE-242 is a field examination conducted according to Project Instructions OPR-L123-RA-83 dated February 4, 1983; Change 1 dated March 11, 1983; Change 2 dated March 23, 1983; and Change 3 dated July 27, 1983.

This field examination consists of forty-one item investigations to resolve specific deficiencies noted in areas recently surveyed on H-9793 (1978), H-9794 (1978) and H-9811 (1979). These investigations are within San Francisco Bay ranging from latitude 37°48'15"N to latitude 37°58'30"N.

The hydrographer addresses each of the investigations as separate to the Descriptive Report, referring Sections H through L of the Descriptive Report to the specific investigation discussion. In order to simplify cross-referencing of the many investigations, the hydrographer's discussion of specific investigations, supplemented by the evaluator's comments and page-sized graphics if applicable, have been moved to follow the Evaluator's Report.

Change 3 to the project instructions authorized disposition of items by information from authoritative sources without the requirement for field investigation conducted according to established surveying practice. Investigation items disposed of in this way are not verifiable in the conventional manner and have been accepted, except where conflicting information exists.

The following data has been revised during verification:

a. The projection parameters have been revised to format the data for the PMC Processing System and to change the projection to polyconic.

b. The electronic control correctors were changed to correct for averaging errors.

c. Observed tides from the San Francisco (941-4290) tide gage were used for smooth plotting, whereas predicted tides were used on field sheets.

2. CONTROL AND SHORELINE

Hydrographic control and hydrographic positioning are adequately discussed in the Descriptive Report paragraphs F and G, and the Horizontal and Electronic Control Reports for OPR-L123-RA-83.

The smooth sheets were plotted using published, preliminary adjusted and field positions based on the North American Datum of 1927.

The applicable reviewed Class I shoreline manuscripts are:

	Date of Photography	Date of Field Edit
TP-00526	March 1977	Nov. 1978 and April 1979
TP-00527	March 1977	April 1979
TP-00528	March 1977	November 1978
TP-00529	March 1977	November 1978

3. HYDROGRAPHY

The crosslines agree well, generally within a half foot.

The depth curves could be adequately drawn.

The development of the bottom configuration and the determination of least depths were adequate, except as noted in the individual discussions of specific investigations.

4. CONDITION OF SURVEY

The hydrographic records and final reports adequately conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, except as noted in the Preprocessing Examination Report dated July 25, 1983 and:

a. Richmond Harbor Channel Light 10, charted as position approximate (PA), was not located to third order accuracy as required by Section 1.6.5 of the Hydrographic Manual (third paragraph).

b. Corinthian Harbor Lights 1 and 2 were noted as mischarted, yet were not located to third order accuracy as required by Section 1.6.5 of the Hydrographic Manual.

c. AWOIS Item 50571, a 25-foot shoal reported by the Corps of Engineers at latitude 37°49'19"N, longitude 122°25'15"W, was neither investigated nor addressed in the Descriptive Report. Furthermore, a 27-foot sounding in the area of the shoal on Item Investigation No. 11 at latitude 37°49'19.5"N, longitude 122°25'17.5"W was not developed to determine the least depth.

d. Documentation of dives and wire sweeps was not complete. Although detached positions defining the search area were provided, the on-site field records documenting the participating individuals, environmental factors such as weather and water visibility, sketches, comments and descriptions were not made part of the survey records.

5. JUNCTIONS

FE-242 junctions with the following contemporary surveys:

H-9811 (1979)
H-9793 (1978)
H-9794 (1978)
H-10080 (1983)

The present survey also supersedes portions of some junction surveys, and section 6 contains a complete discussion of this condition.

Junctions were adequately accomplished except with H-9794 where 60- and 90-foot curves are not in agreement due to significant changes since the earlier survey. Further discussion is contained under investigation item 11. H-9811 has been previously forwarded; however, curves are in substantial agreement.

6. COMPARISON WITH PRIOR SURVEYS

H-9793 (1978) 1:10,000
H-9794 (1978) 1:10,000
H-9811 (1979) 1:10,000

The forty-one investigations that make up FE-242 all fall within the limits of the above surveys. Where sufficient hydrography was acquired to supersede or supplement a portion of the above surveys, specific discussion and supersession recommendations are included with the individual investigation discussion.

H-7620 (1947) 1:10,000
H-7621 (1947) 1:5,000
H-7623 (1947) 1:10,000
H-7704 (1948-51) 1:10,000
H-7867 (1950) 1:10,000
H-7897 (1951) 1:10,000

These surveys were superseded by the 1978 and 1979 surveys listed above for the areas of common coverage. However, several of the investigations on FE-242 resulted in the comparison and carrying forward of data from these surveys. These occurrences are noted in the applicable investigation discussions.

Presurvey Review Items are addressed as specific field investigations. Description and disposition of these features are included in the discussions that follow the Evaluation Report.

AWOIS Item 50571, a 25-foot shoal reported by the Corps of Engineers at latitude 37°49'19"N, longitude 122°25'15"W was not specifically investigated nor addressed during this field examination. As it falls within hydrography acquired for the investigation of PSR Item No. 11, its disposition is included in the evaluation supplement to that investigation.

7. COMPARISON WITH CHART

18649, 49th Edition, April 10, 1982
18650, 37th Edition, April 17, 1982
18650, 38th Edition, December 17, 1983
18652, 21st Edition, May 1, 1982
18654, 31st Edition, June 5, 1982

a. Hydrography

Charted information originates from the prior surveys previously discussed and miscellaneous sources.

Dangers to navigation submitted by NOAA Ship RAINIER have been supplemented by PMC during office processing. Copies of this correspondence are attached.

The adequacy of the specific field investigations to supersede charted hydrography is addressed in the attached investigation discussions.

Geographic names appearing on the graphics originate with the listed charts except for Point Blunt Rock and Loch Lomond Marina. The marina name originates with the hydrographer and unsupported local information. The rock name originates as an NGS station name appearing on TP-00526.

b. Controlling Depths

Controlling depths, where applicable, are addressed within the appropriate investigation discussion.

c. Aids to Navigation

Aids to navigation applicable to this field examination are discussed in section L of the Descriptive Report and in the applicable investigation discussion. All aids are discussed and adequately serve their intended purpose.

8. COMPLIANCE WITH INSTRUCTIONS

This field examination adequately complies with the project instructions and changes listed in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good field examination. Additional field work is required to resolve the following:

a. Corinthian Harbor Light 1 and 2 and Richmond Harbor Channel Light 10 should be located to third order accuracy.

b. Submerged ruins charted at latitude 30°50'36.68"N, longitude 122°28'28.13"W (AWOIS Item 50568) and latitude 37°52'18"N, longitude 122°27'08"W (AWOIS Item 59569) should be verified or disproven.

See Eval. Supplement
RWD 11/85

Respectfully submitted

James S. Green
Supervisory Cartographer

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting. The survey is recommended for approval.

Dennis Hill
Chief, Hydrographic Section

ITEM INVESTIGATION #1

CHART #: 18649, 18654, 18652

ITEM DESCRIPTION: Develop the 12-, 18-, and 30-foot depth curves in the vicinity of The Brothers.

SOURCE: Change No. 1 to OPR-L123-RA-83 Item Investigation #1.

INVESTIGATION DATES: 30 March - 1 April, 7-8 April 1983.

POSITIONS: Pos. No.s	JD	VESNO
6097-6115	089	2126
6178-6188	090	2126
6189-6212	091	2126
6279-6291	097	2126
6293-6296	098	2126

INVESTIGATION METHOD: Range Azimuth or Range-Range controlled sounding lines, 50 meter spacing, were run perpendicular to the contours in the vicinity of The Brothers. The 12-, 18-, and 30-foot depth contours were adequately developed, as indicated on the attached expansion sheet #1. In comparing RA-10-1-83 survey depths with H-9811, discrepancies ranged from 1 to 20 feet, the large difference is most likely due to the steep depth gradients surrounding The Brothers Islands. The delineation of the 30 foot curve to the south of the westerly Brother shows good agreement with H-9811. The "shallow" area west of The Brothers shown on 9811 does not exist. ✓

CHARTING RECOMMENDATION: This survey is complete and adequate to supersede all prior surveys and the chart. The dolphin charted to the east of the easterly Brother is actually part of a pier running inshore from the dolphins position and should be charted as shown on RA-10-1-83. See Eval Supp to Invest No. 1

RWD

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 1

The results of Item Investigation No. 1, the development of the 12-, 18-, and 30-foot depth curves in the vicinity of The Brothers, are shown on the attached page-sized graphic (sheet 1 of 16).

This investigation was compared with H-9811 (1979). It provides more information and better delineates the 12-, 18-, and 30-foot depth curves. An eight-foot shoal sounding at latitude 37°57'48"N, longitude 122°26'04"W and two rocks (these rocks originated from T-6301 (1934)) were transferred from H-9811. The depth curves in the junction areas have been made in coincidence with those on H-9811 and H-10080 (1983). With the transferring of the above features, this investigation is adequate to supersede H-9811 within the common area.

This investigation was compared to Chart 18654, 31st Edition, June 5, 1982. The dolphin charted at latitude 37°57'48"N, longitude 122°25'53"W is actually part of a pier running inshore from the dolphin's position. However, data to position the pier and the dolphin were not provided. The pier and the dolphin should be charted as shown on TP-00526. This investigation is adequate to supersede the charted information within the area of common coverage.

OK

ITEM INVESTIGATION #2

CHART #: 18649, 18654, 18652.

ITEM DESCRIPTION: Provide soundings along the face of the bulkhead at Point San Pablo.

SOURCE: Change No. 1 to OPR-L123-RA-83 Item Investigation #2.

INVESTIGATION DATES: March 30, 1983.

POSITIONS: Pos. No. 6116 - 6118 JD 089 VESNO 2126.

INVESTIGATION METHOD:

One "Keel-line" was run along the bulkhead, fix positions were taken abeam the north and south ends. Miniranger rates were computed from the fix positions to facilitate plotting of the data. Soundings compared within 1-2 feet of those on survey H-9811. ✓

CHARTING RECOMMENDATION:

Survey sounding data is sufficient and adequate to supersede all prior surveys and the chart.

See Eval Supp to Invest No 2

RWO

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 2

The results of Item Investigation No. 2, to provide soundings along the face of the bulkhead at Point San Pablo, are shown on the page-sized graphic following Item Investigation No. 1 (sheet 1 of 16).

During this investigation a dolphin was located at latitude 37°57'55.4"N, longitude 122°25'40.8"W. This confirms a dolphin presently charted at approximately that position. The charted position of the dolphin should be revised.

The 30-foot depth curve at the south side of the Point San Pablo Pier on prior survey H-9811 should be revised to be consistent with the soundings shown on this investigation. This investigation also junctions with H-10080 (1983). The depth curve is inked in agreement with both H-9811 and H-10080.

Item Investigation No. 2 is adequate to supplement H-9811 and the information charted on Chart 18654, 31st Edition, June 5, 1982 in the area of the Point San Pablo Pier.

BWD

ITEM INVESTIGATION #3

CHART #: 18649, 18654, 18652

ITEM DESCRIPTION: Provide soundings along the pier at Point Orient as described.

SOURCE: Chage No. 1 to OPR-L123-RA-83 Item Investigation #3.

INVESTIGATION DATES: March 30, 1983.

POSITIONS: Position No. 6119-6121 JD 089. VESNO: 2126

INVESTIGATION METHOD: A sounding line was run on the north side of Point Orient Pier, fixes were taken at the west and east ends of the pier and Miniragner rates were scaled off of fix locations to facilitate plotting. One sounding junctions with H-9811 and agrees within one foot. Junction curves inked in agreement with H9811

An obstruction was located at 37° 57' 21.86" N, 122° 25' 33.10" W, inshore of the navigable portions of the pier and 20 meters offshore of equally shoaling depths. It is not considered a danger to navigation.

Included with the survey records is a private survey of Point Orient Pier, overlapping soundings agree within 1-2 feet of RA-10-1B-83 depths. In conversation with Gene Jackson, Operations and Shipping, Standard Oil Company (Phone 415-620-4008) it was learned that the face of the pier will be dredged to 37 feet, out to 500 feet in July of 1983. Private survey filed in cahier

CHARTING RECOMMENDATION: The RA-10-1B-83 soundings along Point Orient Pier are considered adequate and sufficient to update all prior surveys and the chart. See attached page sized graphic sheet 2 of 16 for results of this investigation. This investigation supplements H9811 (1979) and the charted information on 18649, 49th Edition, April 10, 1982.

South end Molate fuel pier
note ① South end Lt. on pier
② No catwalk to mooring dol.

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 4

The results of Item Investigation No. 4, to provide additional soundings along the pier of Molate Point, are shown on the page-sized graphic that follows Item Investigation No. 3 (sheet 2 of 16).

This investigation was compared with prior survey H-9811 (1979). TP-00526 and H-9811 have been modified to show a catwalk rather than a full-width pier to the north. The catwalk at the south end at Molate Point has been removed and a mooring dolphin located at the former southern tip. The pier of Molate Point should be depicted as shown on TP-00526 less the catwalk at the south. In addition, three new mooring dolphins not shown on H-9811 were located. They and the mooring dolphin to the south noted previously are plotted on the page-sized graphic that follows Item Investigation No. 3. The depth curves in the junction area with H-9811 are inked in coincidence. This investigation is adequate to supplement H-9811 in the area of the pier of Molate Point.

This investigation was also compared with Chart 18649, 49th Edition, April 10, 1982. The pier at Molate Point should be charted according to TP-00526, less the catwalk at the south end. This investigation is adequate to supplement the charted information in the area of common coverage.

ITEM INVESTIGATION #5

CHART #: 18649, 18652

ITEM DESCRIPTION: Provide soundings along the north side of the pier at Castro Point and further develop the 6, 12, and 18-foot depth curves in the vicinity.

SOURCE: Change No. 1 to OPR-L123-RA-83, Item Investigation #5

INVESTIGATION DATES: 1, 6, 14, and 26 April 1983

POSITIONS:

Pos. No.'s	J.D.	VESNO
6225-6234	091	2126
6289-6303	096	2126
6309-6349	104	2126
6364-6365	116	2126

INVESTIGATION METHOD: Range-Azimuth and Range-Range controlled sounding lines were run at 50 meter spacing to develop the 6, 12, and 18-foot contours. One sounding line was also run along the north side of the pier. Where soundings overlap with survey H-9811 they compare within 1 to 2 feet of RA-10-1B-83 soundings. The shoreline in the vicinity of Castro Point has undergone major revisions, and is presently as it appears on RA-10-1B-83. Numerous wrecks and a row of pilings were positioned to the north of Castro Point, east of the small boat harbor, presumably for the purpose of creating a breakwater for the boat harbor. This area will most likely undergo further shoreline alteration in the near future. An exposed obstruction located at 37°56'20.86" N, 122°25'00.95" W and a submerged wreck located at 37°56'13.19" N, 122°24'52.86" W were reported to the Coast Guard for inclusion in the local notice to mariners. The submerged ~~obstruction~~ wreck is not hazardous to vessels which can presently use this area since vessels cannot enter this area with draft exceeding 6 feet. The 6, 12, and 18-foot contours were adequately developed, see expansion #3 at 1:2500 scale (attached), and reveal a shoaling trend to 6 feet to the north of the pier. The charted 16 foot depth at 37°56'15.0" N, 122°24'57.0" W is incorrect and should be superseded by a 6 foot sounding as per RA-10-1B-83.

See Eval Supp to Invest No. 5

CHARTING RECOMMENDATION: The shoreline in the Castro Point area should be recharted as shown on RA-10-1B-83. The charted 16-foot sounding at 37°56'15" N, 122°24'57" W, should be changed to a 6 foot sounding. The RA-10-1B-83 soundings in the Castro Point area are considered adequate and sufficient to update all prior surveys and the chart.

See Eval Supp to Invest No. 5

Pwo

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 5

The results of Item Investigation No. 5, to provide soundings along the north side of the pier at Castro Point and further develop the 6-, 12-, and 18-foot depth curves in the vicinity are shown on the page-sized graphic immediately following (sheet 3 of 16).

This investigation was compared with H-9811 (1979). FE-242 provides much more data in the area. The depth curves in the junction areas are in coincidence with those on H-9811. This investigation is adequate to supersede H-9811 within the area of common coverage.

The investigation was compared with Chart 18649, 49th Edition, April 10, 1982. The following items merit discussion:

a. The three piers charted at latitude 37°56'12"N, longitude 122°24'46"W should be shown as one pier as depicted on TP-00526.

b. The feature (a one mm circle) charted at latitude 37°56'10"N, longitude 122°24'48"W was not found during this survey. Piles were located 45 meters northeast of this feature, and it is possible that this symbol represents the piles.

c. The wreck charted at latitude 37°56'16"N, longitude 122°24'50"W is charted 30 meters southwest from that shown on TP-00526. The source for charting that wreck should be reviewed and the wreck charted accordingly. This wreck is shown on this survey as depicted on TP-00526.

d. The 16-foot sounding charted at latitude 37°56'13"N, longitude 122°24'57"W, source unknown, is not representative of the area and misleading, as shoaler data exists in the area. This 16-foot sounding should be removed from the chart and more appropriate soundings selected from this survey.

With the exceptions noted above, this survey is adequate to supersede the charted information within the area of common coverage.

ITEM INVESTIGATION #6

CHART: #18649, 18652

ITEM DESCRIPTION: Additional soundings to supplement survey H-9811 at the Standard Oil Long Wharf.

SOURCE: OPR-L123-RA-83, Change No. 1

INVESTIGATION DATE: JD 104, VESNO 2126

OIC: LTJG Mathwig

REFERENCES: RA-10-1B-83, Pos. 6297-6308, Private Survey, Richmond Long Wharf

INVESTIGATION METHOD: "See Field Sheet" hydro was performed by RA-6 (2126)

SHORELINE: Pier detail was obtained from H-9811 1979

COMPARISON WITH PRIOR SURVEY: This area was compared with prior survey H7620 1947 (1:10,000). Depths for the recent survey averaged 10 feet shoaler on the NE face of the most eastern pier finger and averaged 5 feet shoaler on the SW face of the same pier finger. Other areas were not adequately surveyed on H7620 so as to provide comparisons. See Eval Supp to Invest No. 6

SPECIAL NOTE: A recent survey was provided for this entire pier area by Standard Oil officials. This item investigation compared favorably with the sounding sheet. Officials point out that the berthing areas will be dredged during the summer of 1983. The controlling depths will be 40 feet at the SW face of the main pier, 19 feet at the NE face of the northern arm of the main pier, and 15 feet between the southern arm of the main pier and the eastern pier finger. For further information contact Mr. Gene Jackson (operations & shipping) @(415) 620-4008 or the wharfmaster @ (415) 620-4388. See Eval Supp to Invest No. 6

COMPARISON WITH THE CHART: Chart 18649 portrays no sounding detail of this area and no direct comparison was made. ✓

CHARTING RECOMMENDATION: The area will soon be dredged, obtain post dredge survey. Concur

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 6

The data collected during this investigation consisted of soundings based on estimated positions on the inside of the Standard Oil Long Wharf. The data collected was consistent with that shown on the Map of Soundings, Standard Oil Company of California, included with the survey records (filed in cahier). Since there is more data more accurately positioned on the private survey and the area was scheduled for dredging during the summer of 1983, the information collected during this survey has not been smooth plotted. Prior to recharting this pier, post dredge survey information should be obtained as referenced in the ship's discussion.

CHART #: 18649, 18652 ITEM #7

ITEM DESCRIPTION: Additional soundings to supplement survey H-9811.

SOURCE: OPR-L123-RA-83, Change No. 1.

INVESTIGATION DATE: 3/26/83, JD 85, VESNO 2125
JD 89 Leadline Soundings.

OIC: LTJG Mathwig

REFERENCES: RA-10-1B-83 Pos. 5000-5039, and accompanying inset.

INVESTIGATION METHOD: Range Azimuth hydro was performed by RA-5 (2125) on JD 085. Pier faces not sounded were due to presence of ships. Soundings were also taken by leadline on JD 089. ✓

SHORELINE: Shoreline detail was obtained from H-9811 1979.
TP-00527 is shoreline source

COMPARISON WITH PRIOR SURVEY: This area was compared with prior survey H-7623 1947 (1:5,000). Depths along north face of the southern pier are 3-5 feet deeper on the present survey. Depths on the south face of the northern pier are an average of 10 feet shoaler on the present survey. Depths on the north face of the northern pier average 14 feet shoaler on the present survey. See Eval Supp to Invest No. 7

Other soundings further north of the northern pier are also considerably shoaler on the present survey. ✓

COMPARISON WITH THE CHART: Chart 18649 portrays no sounding detail of this area and no direct comparison was made. See Eval Supp to Invest No. 7

CHARTING RECOMMENDATION: Chart soundings as shown on ~~RA-10-1B-83.~~ FE-242

LWD ✓

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 7

The results of Item Investigation No. 7, to provide soundings in the vicinity of latitude 37°54'20"N, longitude 122°22'12"W, near Point Potrero, to supplement survey H-9811, is shown on the page-sized graphic following (sheet 4 of 16).

This investigation was compared with H-9811 (1979). This investigation provides data in a small "holiday" that existed on H-9811. Soundings in the junction area with H-9811 are in agreement and the junction curves are inked in coincidence. The submerged pipe on H-9811 at latitude 37°54'22"N, longitude 122°22'22.7"W, originating from H-7623 (1947), was searched for (as Item Investigation No. 50570) and not found. It has been disproven and should be deleted from the chart.

Richmond Harbor Channel Light 10 is also plotted on the page-sized graphic (sheet 4 of 16). Its position differs from that plotted on H-9811. Refer to section N of the Descriptive Report for additional information on this feature. This feature has been relocated and should be charted as shown in this investigation.

This investigation is adequate to supersede H-9811 within the areas of common coverage.

The survey was compared with Chart 18649, 49th Edition, April 10, 1982. There is no sounding detail charted in the area of the investigation.

ITEM INVESTIGATION #8

CHART: 18649

ITEM DESCRIPTION: Provide sounding in the marina at Paradise Cay.

SOURCE: Change No.1 to OPR-L123-RA-83 Item Investigation #8.

INVESTIGATION DATES: March 31, 1983 (JD 090), and April 6, 1983 (JD 096)

POSITIONS:

Pos. No's	J.D.	Vessel No.
5051-5067	090	2125
8279-6288	096	2126

INVESTIGATION METHOD: The survey was conducted by "See Field Sheet" hydrography methods. Lines were run mid channel with fixes noted at locations referenced to shoreline features or finger piers. Lines run out of the boat basins were tied in with fixes determined by Range/Azimuth. No anomolous shoreline features were noted. ✓

The 8"x11" field sheet was hand plotted with the most representative least depths. Soundings were manually adjusted for TRA and tide corrections prior to plotting. Shoreline was transferred from Survey H-9811. See Eval Supp to Invest No. 8

The field sheet was compared with Survey H-9811 (1979). In general, hydrographic lines run out of the boat basins are several feet deeper. A difference of 6 feet occurs at the entrance to the north boat basin where a three foot sounding exists from the prior survey. The large discrepancy is indicative that dredging may have taken place. See Eval Supp to Invest No. 8

The survey was also compared with chart number 18649 (1:40,000). Very few comparisons could be made. A four foot discrepancy exists at the entrance to the south boat basin which could be due to dredging. The chart has a one-half foot sounding. See Eval Supp to Invest No 8

CHARTING RECOMMENDATION: Survey of this item is complete and adequate and should supersede all prior survey data for charting. See Eval Supp to Invest No. 8.

X

RWD

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 8

Soundings within the small-craft facilities at Paradise Cay were obtained without aid of electronic horizontal control. Rather, positioning was accomplished by visual reference to shoreline features. Since these data were not in digital form suitable for computer processing, they were manually reduced for vertical correctors.

The results of this investigation are shown on the page-sized graphic (sheet 5 of 16).

This investigation primarily provides data within the marina, where no data was provided on H-9811 (1979). A 3-foot sounding on H-9811 at the entrance to the north boat basin, latitude 37°54'57.5"N, longitude 122°28'24"W is not representative of the entrance channel depths and should not be charted. (The 3-foot sounding is likely mispositioned on H-9811 or the area may have been dredged since 1979). The 6- and 12-foot depth curves on H-9811 should consider both sets of data, except for the 3-foot sounding previously discussed. This investigation is adequate to supplement H-9811 for its area of coverage.

The comparison with Chart 18649, 49th Edition, April 10, 1982 reveals the only charted item is a 1/2-foot sounding at the entrance to the south boat basin. This 1/2-foot sounding appears to originate from H-7620 and prior to the construction of the Marina Paradise Bay. It is superseded by data found on this investigation and H-9811. H-9811, as supplemented by this investigation, is adequate for the charting of this area.

ITEM INVESTIGATION No 9

CHART: 18649 and 18652

ITEM DESCRIPTION: Belvedere Cove, Marinas, and area in vicinity of 37°52'18"N and 122°27'30"W

SOURCE: Change No: 1 to OPR-L123-RA-83

ITEM INVESTIGATION: No. 9

INVESTIGATION DATES: 22, 24, 26 March 1983 and 4 April 1983. JD's - 081, 083, 085, 094

JD - 081, 083, 085 - VESNO 2124
JD - 094 - VESNO 2126

POSITIONS: VESNO 2124 - No's 4009 - 4144
VESNO 2126 - No's 6235 - 6278

INVESTIGATION METHOD:

Range/Range hydrography was run in the eastern part of Belvedere Cove using Mini-Rangers. The limits of this hydro extends westward from Pt. Tiburon to Corinthian Yacht Club. ✓

Range/Azimuth was used to collect the data in the remaining parts of the cove using equipment set up on Pt. Stuart Lighthouse (stn. 103). The data collected in Corinthian Yacht Club was "see field sheet" hydro. All data was collected using 50 meter line spacing at a 90-45 degree angle to the contour lines. ✓

SHORELINE:

The shoreline for this survey was taken from survey, H-9793 (1978), 1:10,000. Two new piers that were not on the prior survey shoreline were located. A floating pier was positioned at 37°52'21.63"N and 122°27'15.34"W on JD 083. A fixed pier was located at 37°52'18.16"N and 122°26'57.8"W on JD 083. Changes to shoreline are shown in red. 9

See Evd Supp to Invest No 9

CROSSLINES:

14.7 percent of the 4.25 nautical miles of hydrography in this survey are crosslines. The sounding at the intersections agree well with the contour trends and the mainscheme soundings. At no point does the difference between soundings exceed 2 feet. Crossline comparison is considered very good. ✓

COMPARISON WITH PRIOR SURVEYS:

The following prior surveys were used for comparisons: ✓

Registry No:	Scale	Year Surveyed
7704	1:10,000	1948
9793	1:10,000	1978

During the long period of time between the prior survey, number 7704 (year 1948), and the present survey, extensive development has occured in Belvedere Cove. Two new yacht clubs with facilities for large pleasure craft have been built. Hence, comparisons with soundings in those areas are of little value. ✓

The survey, H-9793 (1978) and this survey compare well at all junction points and throughout the survey area. All sounding comparisons fall within 1-2 feet. ✓

A pile (3 not cited) positioned on the survey H-9793 at 37°52'22.5"N and 122°27'35.9"W was diver investigated on 15 April 1983, JD 105, using a 100 meter radius line sweep tied off to a new 30 foot long wooden breakwater at position 37°52'22.0"N and 122°27'37.5"W. No obstruction was found. It is recommended that the pile not be added to any future charts. Concur

COMPARISON WITH CHART:

This survey was compared with chart 18649, 49th edition, dated 10 April 1982. Of the nine soundings on the chart that fall within this survey area all but one are within one to two feet of the surveyed depths. The one noted is the 15 foot charted depth located at 37°52'20.0"N and 122°27'04.2"W. The depth from the present survey in that area is 20 feet. The 15 foot depth is considered disproved. ✓

CHARTING RECOMMENDATIONS:

The data acquired is considered sufficient to supersede the prior surveys for present chart. It is specifically recommended that the 15 foot sounding located at 37°52'20"N and 122°27'04.2"W be deleted. Concur. See Eval Supp to Invest No 9

RWP/

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 9

The results of this investigation, to develop the access channels to the two marinas in Belvedere Cove and to resurvey the area offshore where soundings had been rejected on H-9793, are shown on the page-sized graphic following (sheet 8 of 16).

The shoreline should be charted from reviewed manuscript TP-00526. The two new piers referenced in the hydrographer's discussion are located on TP-00526 and shown on H-9793, confirmed by detached positions and shown in black ink on the field sheet. A wooden breakwater at latitude 37°52'22"N, longitude 122°27'37.5"W has been transferred to the smooth sheet directly from the field sheet without supporting positional information.

The investigation was compared with H-9793 (1978). The depth curves in the junction areas are in coincidence. The pier originating from H-7704 (1948-51) and transferred to H-9793 at latitude 37°52'20"N, longitude 122°27'08"W has been brought forward to this survey as submerged pier ruins. See the disposition of AWOIS Item 50569. With the transfer of two additional soundings in the marina at latitude 37°52'18"N, longitude 122°27'19"W and latitude 37°52'19"N, longitude 122°27'18"W, this investigation is adequate to supersede H-9793 within the area of common coverage.

This investigation was compared with Chart 18649, 49th Edition, April 10, 1982. The charted soundings originated from H-7704 (1948), which has been subsequently superseded by H-9793 (1978). This investigation is adequate to supersede the charted hydrography within the area of common coverage.

Corinthian Harbor Lights 1 and 2 (Light List Nos. 586.10 and 586.20) are not charted correctly. The present survey positions were generated by scaling the locations from the pier and breakwater shown on H-9793 on which the lights are presently located. No Third Order position exists for the lights, and it is recommended that they be charted at the discretion of the compiler.

ITEM INVESTIGATION #10

CHART #: 18649, 18650, 18652

ITEM DESCRIPTION: #1, Resurvey of the area south of Angel Island

SOURCE: OPR-L123-RA-83 Project Instructions, Change No.1

INVESTIGATION DATES: JD 83, 84, 85, 86, 88, 89, 90, 94

POSITIONS: 3146-3260, 3279-3350, 3384-3390, 4227-4289, 4300-4321, 4323-4431, 6246-6275

INVESTIGATION METHOD: Mini-Ranger position controlled hydrographic survey. 50 m and 100 m line spacing was used. Development of shoal soundings used 25 m line spacing. There are 3 expansion sheets for this survey area.

SHORELINE: Shoreline for Item Investigations #10 was transferred from surveys H-9793 (1978) and H-9794 (1978) 1:10,000 scale. All shoreline features were verified and retained with the exception of 3 islets at 37°51'19" N, 122°26'25" W, the islets should have rock symbols, located at Pos. No.'s 1006-1008, JD 123, and include the foul limit as shown on RA-10-1A-83. Three additional rocks were located; Pos. No. 3318 JD 086 37°51'12.64" N, 122°25'57.41" W, Pos. No. 1003 JD 084 37°51'19.60" N, 122°25'43.27" W, and Pos. No. 1009 JD 123 37°51'15.94" N, 122° 25'21.18" W, to be included in shoreline. The rock, Position No. 1004 JD 084, located at 37°51'16.81" N, 122°25' 49.52" W is a charted rock which was relocated to confirm the offshore extent of the ledge charted in that area. The rock, Pos. No. 1005, JD 123, located at 37°51'11.01" N, 122°25'09.38" W, is charted as an islet and should be changed to a rock symbol, defining the western foul limit off Point Blunt.

See Eval Supp to Invert No 10

CROSSLINES: A total of 4.3 nautical miles of crosslines were run representing 29% of the mainscheme mileage. Agreement was excellent as all comparisons were within 2 feet except for two, 20' vs 25' at 37°51'31.5" N, 122°26'36.6" W, and 38' vs 42' at 37°51'06.9" N, 122°24'57.0" W. Steep submarine slopes in the area would cause large depth differences with small position changes.

COMPARISONS WITH PRIOR SURVEYS: Comparisons of junctioning soundings with H-9793 agreed fairly well. The recent survey depths were 2 to 4 feet deeper. Junction with H-9794 also differed by 2 to 4 feet except east of longitude 122°25'20" W where the recent survey soundings are shoaler by up to 10 feet, 128 vs 138 at 37°50'45.9" N, 122°25'14.7" W, with most soundings being 3 to 5 feet different. Comparisons with

RWO

prior survey H-7704 agreed well, particularly inshore. A development was run and plotted on expansion sheet 4 at 37°51'10" N, 122°26'30" W, in the area where a 24 foot depth on prior survey H-7704 (48) was carried forward from prior survey H-3968 WD (1917), this area now has ~~30~~ 28 foot depths. The 24 foot depth is considered disproved unless the prior depth was determined by leadline.

See Eval Supp to Invert No 10

A development was run and plotted on expansion sheet 5 at 37°51'10" N, 122°25'55" W, in the area of a 20 foot prior survey sounding, a least depth of 17 feet was found at this location and was reported to the 12th Coast Guard District (see attached radio message).

✓

A development was run and plotted on expansion 6 at 37°51'00" N, 122°25'10" W in the area of a prior survey depth of 24 feet. The least depth found was a 26 foot. The prior survey sounding should be retained as there exists a possibility a two foot peak remains.

See Eval Supp to Invert No 10

Concur

COMPARISIONS WITH CHART 18650: 54% of the comparisons agree within 3 feet. The remainder of the soundings did not agree well. It is recommended that the recent survey be used to update the soundings on the chart. All shoreline features on the chart (18649, 18650) were verified and should be retained. Three rocks should be added to the shoreline, and islets at two locations should be changed to rock symbols with adjusted foul limits as discussed previously.

See Eval Supp to Invert No 10

CHARTING RECOMMENDATION: Retain charted shoreline with the following revisions. Add three rocks, change islet symbols to rock symbols and adjust and add foul limits as previously discussed. RA-10-1-83, PSR #10 hydrography is considered complete and adequate to supersede all prior surveys and the chart. The least depths discussed should be charted.

See Eval Supp to Invert No 10

BWD ✓

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 10

The results of this investigation, to resurvey the area south of Angel Island and to investigate a charted 24-foot depth at latitude 37°51'02"N, longitude 122°25'08"W, are shown on two page-sized graphics that follow (sheet 6 of 16 and 7 of 16). The investigation was divided for plotting on page-sized graphics at longitude 122°26'00"W, which is consistent with the junction between prior surveys H-9793 and H-9794.

Photogrammetric manuscript TP-00526 should be used to chart the high water line, including islets, for the area covered by this investigation.

This investigation was compared with H-9793 (1978) and H-9794 (1978). Soundings generally agree within two feet, with an extreme difference of about 11 feet in a deep and changeable area. Soundings in the junction areas with H-9793 and H-9794 are consistent and the depth curves are in coincidence.

The charted 24-foot depth at latitude 37°51'02"N, longitude 122°25'08"W, originating from H-7704 (1948-51) has been brought forward to this survey. FE-242 shows a 26-foot minimum depth in this area. The 24-foot minimum depth should be charted.

Another 24-foot sounding on H-7704 at latitude 37°51'06"N, longitude 122°26'33"W was investigated. This 24-foot sounding was carried forward from H-3968 W.D. (1917) and falls on the southwest slope of a mound on H-7704 with a minimum depth of 14 feet at latitude 37°51'12"N, longitude 122°26'25.5"W. This feature has since changed, with this investigation revealing a minimum depth of 20 feet near the position of the 14-foot depth and 28 feet at the position of the 24-foot depth. This charted area should be revised in accordance with the present survey.

Three rocks awash originating from H-7704, shown on H-9794 off Point Blunt, latitude 37°51'09"N, longitude 122°25'04"W, have not been brought forward to this survey as this area is now depicted as foul with boulders.

Several soundings have been brought forward from H-9794 to better delineate features or to provide additional inshore coverage. This investigation is adequate to supersede H-9793 and H-9794 within the area of common coverage.

This investigation was compared with Chart 18649, 49th Edition, April 10, 1982 and Chart 18650, 37th Edition, April 7, 1982. The charted information originated from H-7704 (1948-51) and miscellaneous sources, which has subsequently been superseded by H-9793 and H-9794 for the area covered by this investigation.

Two piles on Chart 18649 at latitude 37°51'34"N, longitude 122°26'35"W, charting sources unknown, are shown on this survey as ruins covering at MHW. These piles should be revised accordingly.

This investigation, plus TP-00526 for the high water line, is adequate to supersede the charted information for the area of common coverage.

RWD

ITEM INVESTIGATION No. 11

ITEM DESCRIPTION: PSR Item 11

SOURCE: OPR-L123-RA-83, Project Instructions Change No. 1

INVESTIGATION DATES: JD 77, 80, 83, 85, 94

POSITIONS: 3000-3047, 3051-3102, 3351-3383, 6000-6054, 6246-6278

INVESTIGATION METHOD: Mini-Ranger position controlled hydrographic survey, 50m line spacing. ✓

SHORELINE: Shoreline was transferred from H-9794 (1978). No discrepancies were found when the hydrography was performed. See Eval Supp to Invest No 11

CROSSLINES: A total of 3.1 nmi of crosslines were run representing 38% of the mainscheme mileage. Agreement was excellent as all but one comparison (67 vs 64) were within 2 feet. The location of the one comparison was 37°49'42.0"N, 122°25'42.0"W. Local scouring seems to have been responsible for the deeper sounding. The shoaler sounding is in agreement to surrounding depths. ✓

COMPARISON WITH PRIOR SURVEYS: Comparisons of junction with H-9794 agreed well except those south of Alcatraz. This area is an active dump site. See accompanying U.S. Corps of Engineers February 17, 1983 hydrographic survey of this area. Copy with survey records ✓

Comparisons with prior survey H-7621 is marginal. There is no indication of the 40 to 55 foot soundings of H-7621 northwest of Alcatraz Island. Also to the south an active dumping ground has dramatically changed soundings. Only to the southwest do soundings agree somewhat. The recent survey should supercede H-7621. See Eval Supp to Invest No. 11

Comparison with Chart 18650: Sounding comparisons varied widely with those of the chart. As expected from the poor comparison with Survey H-7621, soundings varied up to 2¾ feet (40 vs 63/4, at 37°49'43.8"N, 122°25'41.8"W). ✓

Since there is such a change (only 2 comparisons were within 2 feet), it is recommended that the present survey be used to update charting soundings. (See field sheet RA-10-1A-83). See Eval Supp to Invest No. 11

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 11

The results of this investigation, to resurvey the area in the vicinity of Alcatraz Island, is depicted on the page-sized graphic that follows (sheet 9 of 16).

The shoreline source for the area of this investigation is TP-00528.

The investigation was compared with H-9794 (1978). This investigation agrees well with H-9794 inside the 30-foot depth curve surrounding Alcatraz Island. Outside of the 30-foot curve the area is changing rapidly, particularly to the south where a 27-foot shoal now exists in an area that had a 50-foot minimum in 1978. Except for the 60- and 90-foot depth curves around the 27-foot shoal to the south of Alcatraz Island, all other depth curves are in agreement in the junction areas with H-9794. This survey is adequate to supersede H-9794 within the area of common coverage.

This investigation was compared with Chart 18650, 37th Edition, April 17, 1982. Charted information originates from H-7621 (1948) (subsequently superseded for this area by H-9794), H-9794 and unknown sources. There is poor agreement between charted soundings (up to 24 feet) and the results of this investigation. The area charted from H-7621 is not consistent with data from this survey. H-9794 will have to be applied to the area surrounding this investigation in order to have an acceptable junction of depth curves and soundings.

The 27-foot shoal in the junction area with H-9794 is also AWOIS Item 50571, a reported 25-foot shoal at latitude 37°49'19"N, longitude 122°25'15"W. This feature was not specifically investigated nor was it discussed in the Descriptive Report. This feature is not adequately developed or delineated on this investigation and the area differs radically from that shown on H-9794. A Corps of Engineers survey, Alcatraz Disposal Site - SF11, dated 17 February 1983, better depicts this area (copy in survey records). Information in the AWOIS file indicates that this area is to be dredged and surveyed regularly by the Corps of Engineers. This feature should be charted from the latest Corps of Engineers surveys.

An uncharted black can buoy "1" marking this 27-foot shoal was located during this investigation.

The charted Dumping Ground centered at latitude 37°49'18"N, longitude 122°25'22.5"W is associated with the 27-foot sounding discussed previously. The depth in this area is being closely monitored by the Corps of Engineers. It should remain as charted until advised that its status has changed.

RWD

9/10

INVESTIGATION ITEM #12

CHART: ~~#18649~~, 18650, ~~18652~~ 37th Edition, April 17, 1982

ITEM DESCRIPTION: Pier Ruins

SOURCE: OPR-L123-RA-83 Change No. 1, H7621 (1947)

OIC: LTJG Mathwig

INVESTIGATION DATE: 3/25/83 (JD 84), 2030Z

REFERENCES: Pos. 6363, JD 105, RA-10-1A-83

GEODETIC POSITION:

	Latitude	Longitude
Charted	37°48'23"N	122°27'52"W

METHOD OF INVESTIGATION: Dive sweep. A line was attached to the end of an outfall pipe, lat. 37°48'20.94"N, long. 122°27'51.68"W pos. 6363 (see references above), and a 50 meter radius sweep was conducted. Nothing was found. ✓

CHARTING RECOMMENDATION: Delete pier ruins. Concur. Chart outfalls and pipe as shown on page sized graphic sheet 14 of 16

RWD ✓

ITEM INVESTIGATION #13

CHART: ~~#18649~~, 18650, ~~18652~~ 37th Edition, April 17, 1982

ITEM DESCRIPTION: Pier Ruins

SOURCE: OPR-L123-RA-83 Change No. 1, H7621 (1947)

OIC: LTJG Mathwig

INVESTIGATION: March 25, 1983 (JD 084), 2200Z

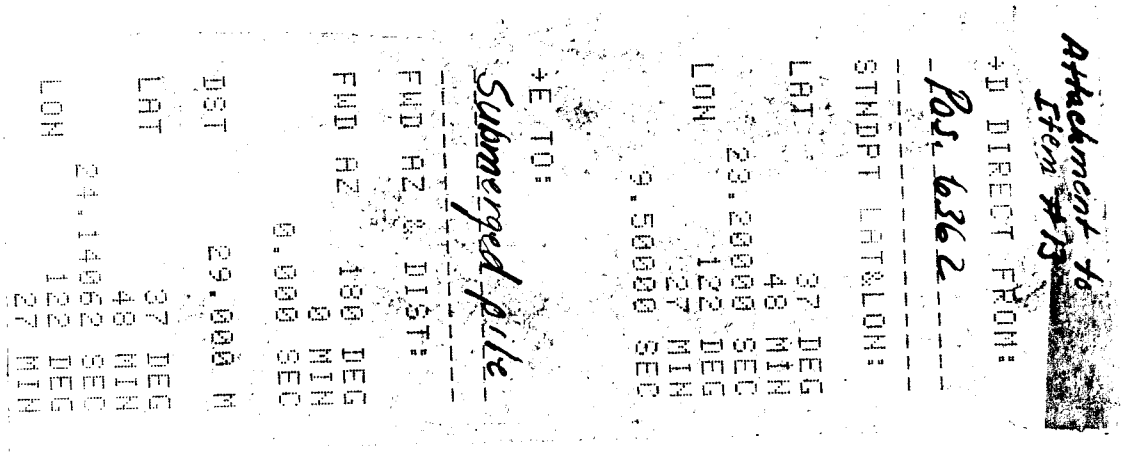
REFERENCES: Pos. 6361, 6362, JD 105, RA-10-1A-83 and attachment

GEODETIC POSITION:

	Latitude	Longitude
Charted	37/48/24 N	122/27/12 W

METHOD OF INVESTIGATION: Dive sweep. A line was attached to the end of an outfall pipe, lat. 37°48'23.63" N, 122°27'11.70" W, pos. 6361 (see reference above), and a 40 meter radius sweep was conducted. Nothing was found. The line was then attached to a small 1 ft. tall concrete pile on the beach, lat. 37°48'23.20" N, 122°27'09.50" W, pos. 6362 (see reference above), and a 50 meter radius sweep was conducted. A submerged wooden pile was located 29 meters north (T) of pos. 6362, Lat. 37°48'24.14" N, 122°27'9.50" W (see attachment). The top of the pile was 8 ft. under @ 2200Z (JD 084). Reduced to covered 8 ft at MLLW

CHARTING RECOMMENDATION: Delete pier ruins, chart submerged pile @ lat. 37°48'24.14" N, long. 122°27'09.50" W. Concur. Chart according to page sized graphic sheet 14,616



14, 15, 16

OPR-L123-RA-83

CHART ~~#18649~~, 18650, ~~and 18652~~ 37th Edition, April 17, 1982

ITEM DESCRIPTION: Submerged pier ruins

SOURCE: PSR Items 14, 15, 16

INVESTIGATION DATE: 3/18/83, LTJG Mathwig

POSITION: Northern San Francisco Waterfront, piers 41,43,47A,&47B

INVESTIGATION METHOD:

Vello Kiisk (Telephone # 415 391-8000), Chief Harbor Engineer for the San Franicsco Port Commission, was personally contacted. Mr. Kiisk stated that at the ends of piers 41, 43, and 47A no ruins exist as the Port Commission had removed these portions of the piers and wire swept the area. Pier 47B was entirely removed, wire swept, and no ruins exist. A recent large scale aerial photo and hydrographic survey for this area are included in survey records.

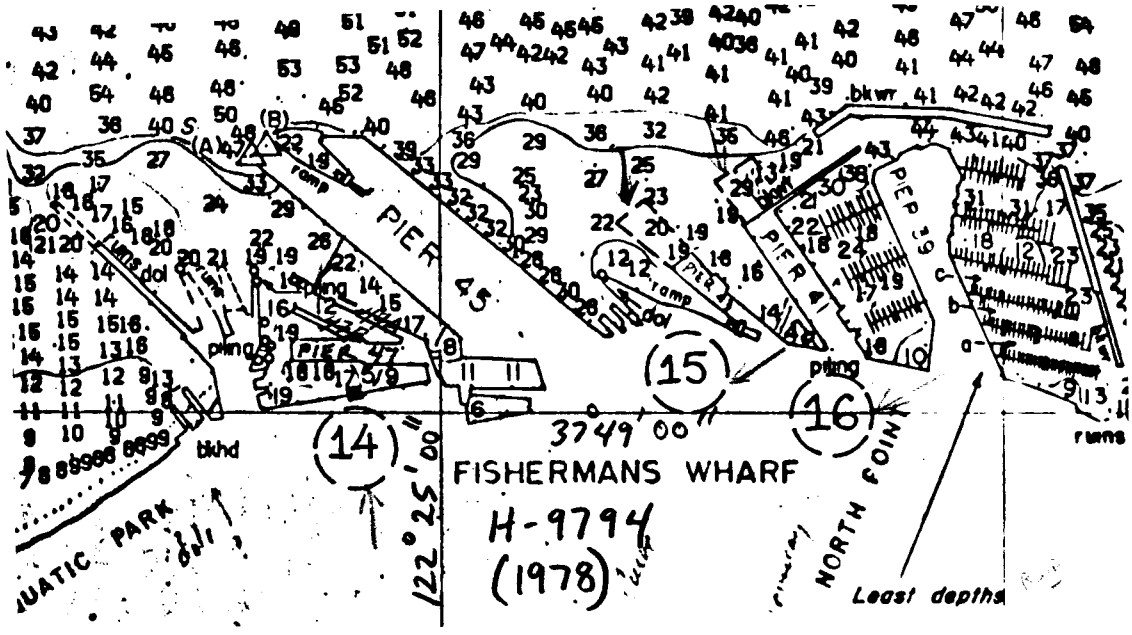
CHARTING RECOMMENDATION:

The ruins portrayed at the ends of piers 41, 43, and 47A should be deleted. Pier 47B should be deleted. Concur SRR

VELLO KIISK
CHIEF HARBOR ENGINEER

FERRY BUILDING
SAN FRANCISCO, CALIF. 94111
(415) 391-8000

PORT OF SAN FRANCISCO



ITEM INVESTIGATION #17

CHART ~~#18652,~~ 18649, 44th Edition, April 10, 1982

ITEM DESCRIPTION: Provide soundings into marinas, canals and basins in Corte Madera Creek.

SOURCE: Change No. 1 to OPR-L123-RA-83, Item #17

INVESTIGATION DATES: March 27, 1983 (J.D. 086)

POSITIONS: Pos. No.'s 6055-6065, Vessel No. 2126 (RA-10-1C-83)

INVESTIGATION METHOD: Sounding lines were run, midchannel as indicated on the chartlet provided for the investigation. Fix positions were taken abeam of prominent and identifiable shoreline features. Soundings were corrected for TRA and predicted tides and hand plotted on the attached chartlet. ✓

An uncharted obstruction in the main channel is marked by an Army COE sign on the center span of the Redwood Highway Bridge. Ron Ards of the U.S. COE (Phone #415 974-0872) who made a dive investigation of the obstruction, confirmed by phone conversation that the obstruction consists of concrete blocks protruding 3 to 4 feet off the bottom across the width of the channel, extending from the bridge to 200 ft. east of the bridge. ✓

The basin covered by Position No.'s 6063-6065 is a ferry terminal. There have been major revisions to the shoreline in this area. TP-00526 is not an accurate representation. It is recommended that revision photography be obtained to update this shoreline. The soundings in this basin agree within 1 to 2 feet of the soundings on Survey H-9811 with the exception of 2 soundings in the vicinity of Pos. #6064, where the current survey is 3 to 4 feet shoaler. See Eval Supp to Invest No 17

CHARTING RECOMMENDATION: Publish controlling depths as shown on the attached chartlet. Chart an obstruction under Redwood Highway Bridge. Chart "Ferry Terminal" as shown on attached chartlet. See Eval Supp to Invest No. 17

RWD

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 17

Item Investigation No. 17 was to provide soundings into marinas, canals and basins in Corta Madera Creek. Reconnaissance hydrography in some of the inlets and basins in Corta Madera Creek was accomplished. In accordance with the project instructions, the results of this reconnaissance are plotted on the largest scale chart of the area. However, in order to provide sufficient room to portray the data legibly, chart 18649 has been redrafted at 1:10,000 scale. This drawing is sheet 10 of 16.

The attached sheet depicts the shoreline in the area of the ferry terminal at latitude 37°56'40"N, longitude 122°30'25"W, as shown on the chart. Revisionary data or a description of the noted shoreline discrepancies was not provided in the survey records. Revision photography should be obtained to update the shoreline in this area.

Hydrography in Corta Madera Creek proper west of longitude 122°30'45"W, beyond the limits of H-9811, was not obtained on this survey. The 3-foot reported depth is the only hydrographic information shown on Chart 18649, 49th Edition, April 10, 1982 in Corta Madera Creek west of longitude 122°30'45"W. This depth should continue to be charted from its present source. The reconnaissance hydrography acquired during this investigation can be used to supplement the existing sources for the charting of this area.

mower
DPS

end

ITEM INVESTIGATION #18

CHART: #18652, ~~18649, 18654~~ 21st Edition, May 1, 1982

ITEM DESCRIPTION: Provide soundings as indicated into marinas, canals, and basins in San Rafael Creek.

SOURCE: Change No. 1 to OPR-L123-RA-83, Item #18

INVESTIGATION DATES: March 27, 1983 (J.D. 086), March 31, 1983 (J.D. 090)

POSITIONS: Pos. No.'s 6066-6085, J.D. 086 and Pos. No.'s 6135-6176, J.D. 090 on RA-10-1C-83

INVESTIGATION METHOD: Sounding lines were run midchannel in the basins and marinas as indicated on the Item #18 chartlets provided for the investigation. Fix positions were taken abeam of prominent and identifiable shoreline features. Soundings were corrected for TRA and predicted tides and hand plotted on the attached chartlets. Chartlets replaced by drawings depicting corrected depths. ✓
The basin located at 37°58.3'N, 122°29.7'W is marshy, not navigable, and should be retained as charted on Inset 6 (1:20,000 scale) of Chart #18652. Concur
Soundings in the vicinity of Position #6075 are 4 feet deeper than those charted on Inset 6 (Chart #18652).

CHARTING RECOMMENDATIONS: Publish controlling depths of basins and marinas in San Rafael Creek as shown on attached chartlets. Change charted soundings located at 37°58.2'N, 122°29.9'W to reflect reconnaissance survey depths as shown on the attached chartlet. Concur

(Three hydrographic survey sheets from a COE survey of San Rafael Creek in July 1980 are submitted with the survey records.) See Eval Supp to Invest No 18

RWO ✓

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION NO. 18

Item Investigation No. 18 was to provide soundings into marinas, canals and basins in San Rafael Creek. Reconnaissance hydrography in some of the marinas and basins in San Rafael Creek was accomplished in accordance with the project instructions. The results of this reconnaissance are plotted on a 1:10,000 drawing of the largest scale chart of the area, 18652. This drawing is sheet 11 of 16. An additional drawing, sheet 12 of 16, depicts depths in Loch Lomond Marina.

A Corps of Engineers survey of 9, 10, 11 July 1980 (3 drawings) is included in the survey records and provides additional charting data in San Rafael Creek.

H-10080 (1983) terminates at the entrance to San Rafael Creek. So does H-7867 (1950), the latest prior survey of the area. The data on Chart 18652, 21st Edition, 1 May 1982, page D, Inset 6, 1:20,000 are depths that appear to originate from the above mentioned Corps of Engineers survey. The data provided in this investigation is adequate to supplement existing sources for the charting of this area.

PSR #19

ITEM DESCRIPTION: Submerged pile.

SOURCE: Chart #s 18649, ~~18652~~. 49th Edition, April 10, 1982

INVESTIGATION DATE: 4 April 1983 (JD 094) VESNO: 2125

OIC: ENS K. W. Barton

POSITION NUMBERS: None.

GEODETIC POSITION:	Latitude	Longitude
Charted:	37/~~44~~/55 RWD 45N	122/28/18W
Observed:	Not Found	

POSITION DETERMINED BY: Proximity to Corte Madera Channel Light #4 (Latitude 37°55'46.5"N, Longitude 122°28'16"W)

METHOD OF INVESTIGATION: A 150 meter wire drag line was secured to the base of Corte Madera Channel Light #4 and attached to the stern of the launch. A 50 pound lead ball was secured to the launch end of the drag to keep it on the bottom as the launch drove around the light. Three sweeps were made in opposite directions along a 180 arc to the south side of Light #4. No pile was found on any pass. ✓

RECOMMENDATIONS: Delete the pile presently charted. Concur

RWD ✓

50551
50553
50554

OPR-L123-RA-83

CHART #18649 ~~and 18652~~ 49th Edition, April 10, 1982

ITEM DESCRIPTION: Dolphins (submerged)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983
Items #50551, 50553, 50554

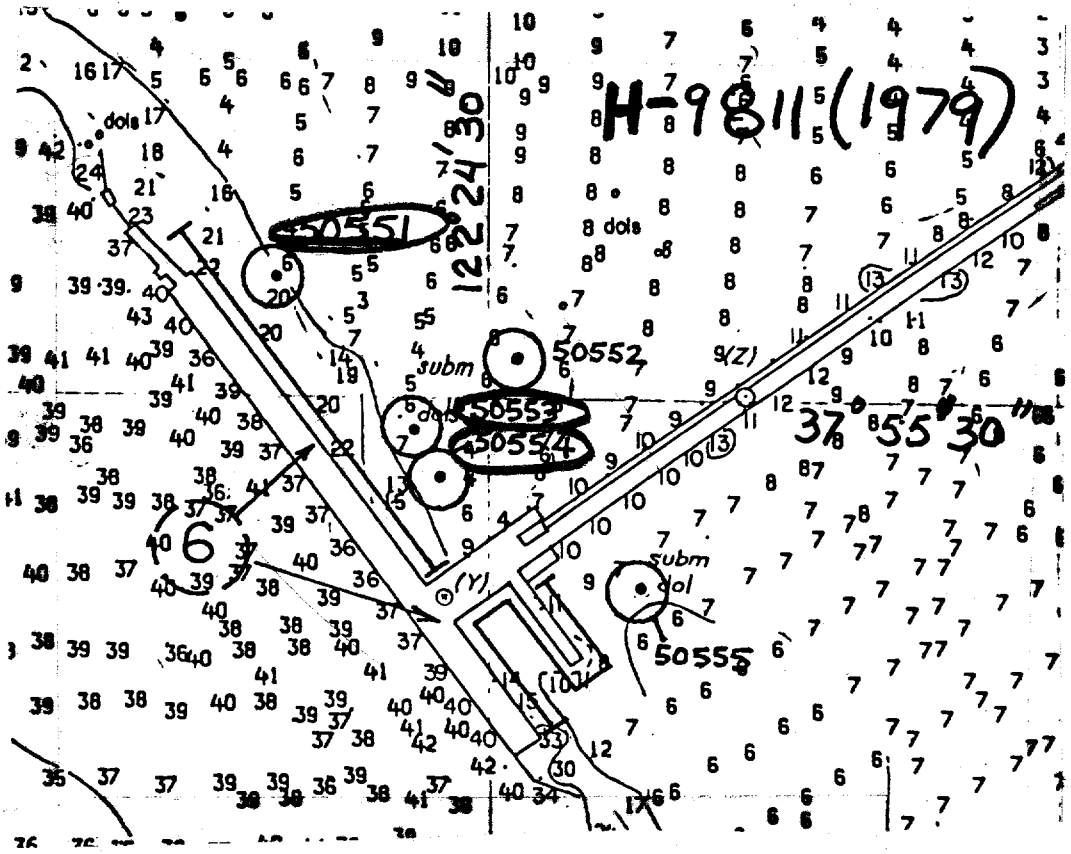
INVESTIGATION DATE: March 24, 1983, LTJG Mathwig

POSITIONS: #50551 37/55/35.00N, 122/24/41.20W
#50553 37/55/28.60N, 122/24/33.80W
#50554 37/55/26.70N, 122/24/32.50W

INVESTIGATION METHOD:

The piles lie within the bargeway (the area NW of the longest pier face) of the Standard Oil long wharf. Gene Jackson, head of operations and shipping (Telephone # 415 620-4008), was personally contacted. Mr. Jackson states that the entire bargeway was last dredged in the late sixties out to a distance of 500 ft from the bargeway pier face. After dredging, the dredged area was wire swept. Survey positions for items 50551, 50553, and 50554 are well within the dredged area and no obstructions exist.

CHARTING RECOMMENDATION: Delete the three dolphins presently charted. Concur



50552

CHART#: 18649, ~~& 18652~~ 49th Edition, April 10, 1982 ITEM #: 50552

ITEM DESCRIPTION: Dolphin (submerged)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983

INVESTIGATION DATE: March 30, 1983 (J.D. 089). VESSEL: RA-5

OIC: ENS Logue

REFERENCES: Position No. 5050

Note: Position number is of the center of the area searched.

GEODETIC POSITION:	Latitude	Longitude
Charted:	37/55/31.5 N	122/24/29.0 W
Observed:	Not Found	

POSITION DETERMINED BY: Range/Azimuth and Check Azimuth

METHOD OF ITEM INVESTIGATION:

The dolphin was searched for by line drag. The drag line consisted of a 50 meter circle sweep. The end of the line at the center of the search was located and marked with a 60 pound weight. The weight was positioned at 37°55'31.7½" N, 122°24'28.3½" W. The extended end of the line was dragged by divers in a circle about the weight. No dolphin was found.

CHARTING RECOMMENDATION:

Delete dolphin presently charted. Concur

RWD

50551

CHART #: 18649 ~~& 18642~~ 49th Edition April 10, 1982 ITEM#: 50555

ITEM DESCRIPTION: Dolphin (Submerged)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983.

INVESTIGATION DATE: March 30, 1983 (J.D. 089). VESSEL: RA-5

OIC: ENS Logue

REFERENCES: Position No. 5049

Note: Position number indicates the center of the area searched.

GEODETIC POSITION:	Latitude	Longitude
Charted:	37/55/22.0	122/24/22.0
Observed:	Not Found	

POSITION DETERMINED BY:

Range/Azimuth and Check Azimuth

METHOD OF ITEM INVESTIGATION:

The dolphin was searched for by line drag. The drag consisted of a 50 meter, 360° circle sweep. The end of the line at the center of the search was located and marked with a 60 pound weight. The weight was positioned at 37°55'21.9$\frac{3}{4}$"N, 122°24'22.1$\frac{1}{2}$"W. The extended end of the line was dragged by divers in a circle about the weight.

No dolphin was found.

CHARTING RECOMMENDATION:

Delete dolphin presently charted. Concur

RWD

50556

ITEM INVESTIGATION #50556

CHART: #18649, ~~18652~~ 49th Edition, April 10, 1982

ITEM DESCRIPTION: Dolphins and pier ruins

SOURCE: AWOIS Listing, T6301 (1934)

OIC: LTJG Mathwig

INVESTIGATION DATE: March 27, 1983 (JD 086)

REFERENCES: See attachment

GEODETIC POSITION:	Latitude	Longitude
Charted:	37/54/37 N	122/23/24 W

METHOD OF INVESTIGATION:

Dive sweep. A line was attached to a point along shore at 37°54'35.26" N, 122°23'23.21" W. This position was determined by a sextant fix. A 125 meter radius sweep was conducted. Nothing was found. ✓

CHARTING RECOMMENDATION: Delete pier ruins and dolphins. Concur

RWD

ATTACHMENT FOR ITEM #50556

Sextant Fix:

Left Object (313) USCG Vessel Traf. Sys. Radar YBI
Center Object (312) Mt. Sutro TV Tower W Antenna
Right Object (214) Southampton Shoal Chan. Lt. 2A
R Check (116) San Francisco Bay N Chan. Lt. 7

L angle 29/08/54
R angle 79/16/24
R check 53/54/00

SIGNALS(L,C,R)= 313,312,214

ANGLE 1 = 29/08/54
ANGLE 2 = 79/16/24

X = 17364.45
Y = 27196.12

LATITUDE = 37/54/35.26
LONGITUDE= 122/23/23.21

SIGNALS(L,C,R)= 313,312,116

ANGLE 1 = 29/08/54
ANGLE 2 = 53/54/00

X = 17361.96
Y = 27198.55

LATITUDE = 37/54/35.33
LONGITUDE= 122/23/23.31

SIGNALS(L,C,R)=

POSITION

STNDPT LAT&LON:

LAT 37 DEG
54 MIN
35.26000 SEC
LON 122 DEG
23 MIN
23.21000 SEC

+J TO:

CHECK POSITION

FOREPT LAT&LON:

LAT 37 DEG
54 MIN
35.33000 SEC
LON 122 DEG
23 MIN
23.31000 SEC

50557

CHART # 18649, 49th Edition, April 10, 1982 ITEM #50557

ITEM DESCRIPTION: Dolphin

SOURCE: AWOIS Listing

INVESTIGATION DATE: March 29 1983 (J.D. 088) VESSEL: RA-5

OIC: ENS Logue

REFERENCES: Position No. 5048

H7897/51--CS256, Dolphin, Topo Signal "GUM"

GEODETIC POSITION	Latitude	Longitude
Charted	37/56/32 N	122/28/41 W
Observed	37/56/31.8 N	122/28/41.6 W

POSITION DETERMINED BY: Range/Azimuth & Check Azimuth

METHOD OF ITEM INVESTIGATION:

Visual sighting. Dolphin consisted of three 12" pilings strapped together and bare 12 feet at 2000 hours Zulu. Reduced to an elevation of 18 ft at MHW

CHARTING RECOMMENDATION:

Dolphin should remain as charted. Concur

See page ruled graphic sheet 13 of 16

✓

K

Rwd,

50558

CHART # 18649, 49th Edition, April 10, 1982 ITEM # 50558

ITEM DESCRIPTION: Dolphin

SOURCE: Awois Listing

INVESTIGATION DATE: March 29, 1983 (J.D. 088) VESSEL: RA-5

OIC: ENS Logue

REFERENCES: Postion No. 5047

H7897/51--CS256; Dolphin, Topo Signal "SAM"

GEODETIC POSITION	Latitude	Longitude
Charted:	37° 56' 31" N.	122° 28' 35" W.
Observed:	37° 56' 30.3" N.	122° 28' 35.7" W.

POSITION DETERMINED BY:

Range/Azimuth & Check Azimuth

METHOD OF ITEM INVESTIGATION:

Visual sighting dolphin consisted of three 12" pilings strapped together and bare 12 feet at 2000 hours Zulu. Reduce to an elevation of 18 ft at MHW ✓

CHARTING RECOMMENDATION:

Dolphin should remain charted. Concur. See page sized graphic sheet 13 of 16.

AWD

50559

CHART # 18649, 49th Edition, April 10, 1982 ITEM # 50559

ITEM DESCRIPTION: Dolphin

SOURCE: Awois Listing

INVESTIGATION DATE: March 29, 2983 (J.D. 088) VESSEL: RA-5

OIC: ENS Logue

REFERENCES: Position No. 5046

H7897/51--CS256; Dolphin, Topo Signal "WIG"

GEODETIC POSITION:	Latitude	Longitude
Charted:	37° 56' 28" N.	122° 28' 27" W.
Observed:	37° 56' 28.3" N.	122° 28' 27.4" W.

POSITION DETERMINED BY:

Range/Azimuth & Check Azimuth

METHOD OF ITEM INVESTIGATION:

Visual sighting dolphin consisted of three 12" pilings strapped together and bare 12 feet at 2000 hours Zulu. Reduce to an elevation of 18 ft at MHW ✓

CHARTING RECOMMENDATION:

Dolphin should remain as charted. Concur. See page sized graphic sheet 13 of 16.

RWD ✓

50560

OPR-L123-RA-83

CHART #18649, ~~and 18652~~ 49th Edition, April 10, 1982

ITEM DESCRIPTION: Submerged Pier Ruins

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983
Item #50560

INVESTIGATION DATE: March 23, 1983, LTJG Mathwig

POSITION: 37°54'27.6" N, 122°23'32.0" W

INVESTIGATION METHOD:

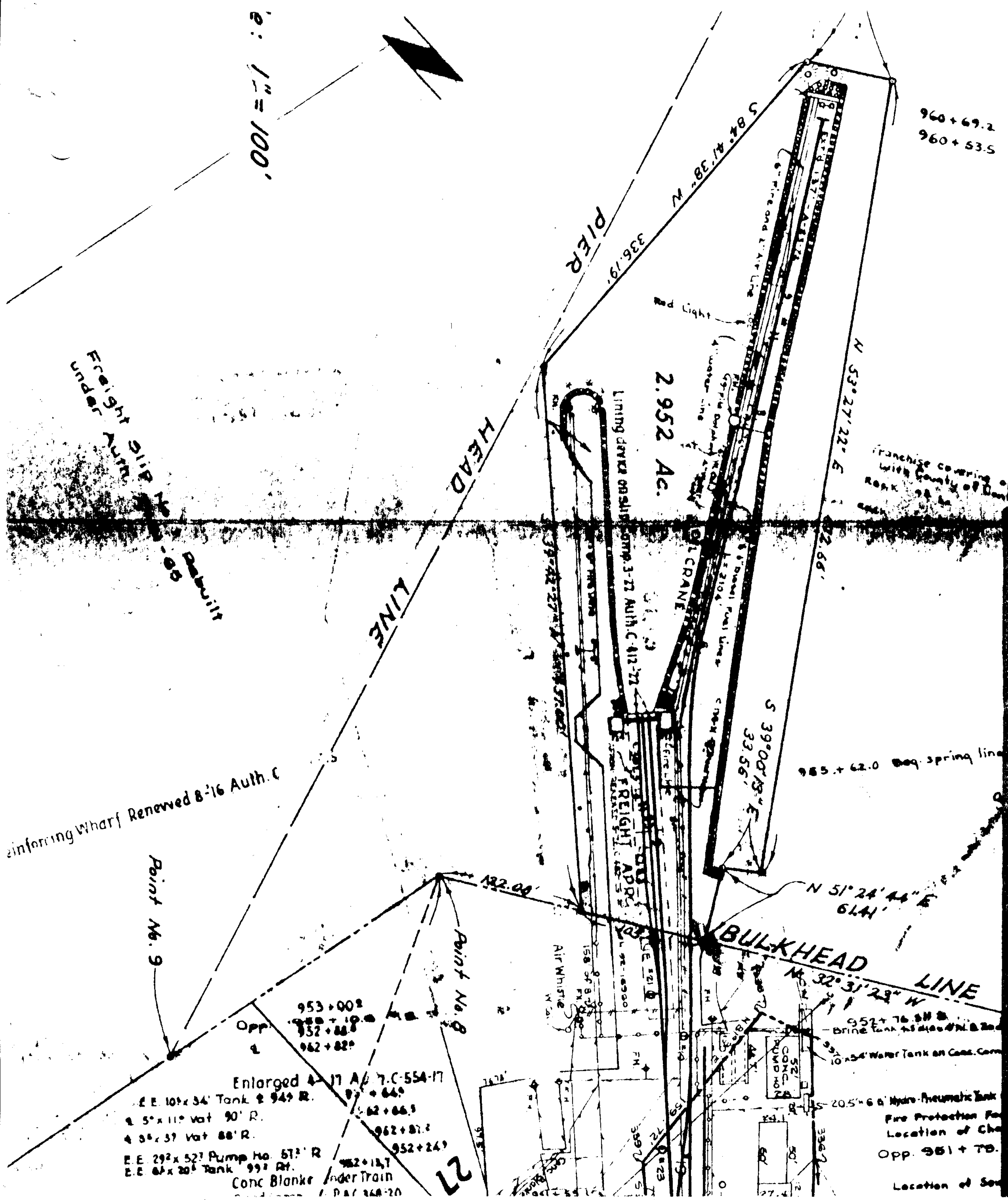
The submerged pier ruins were the result of a fire on the Pt. Richmond Santa Fe Pier. B.V. King, project engineer for the ATSF Railroad Company (Telephone #213 267-5444), was contacted by telephone. Mr. King states that the pier was repaired and all ruins cut two ft. below the mud line. A plan of the repaired pier is attached.

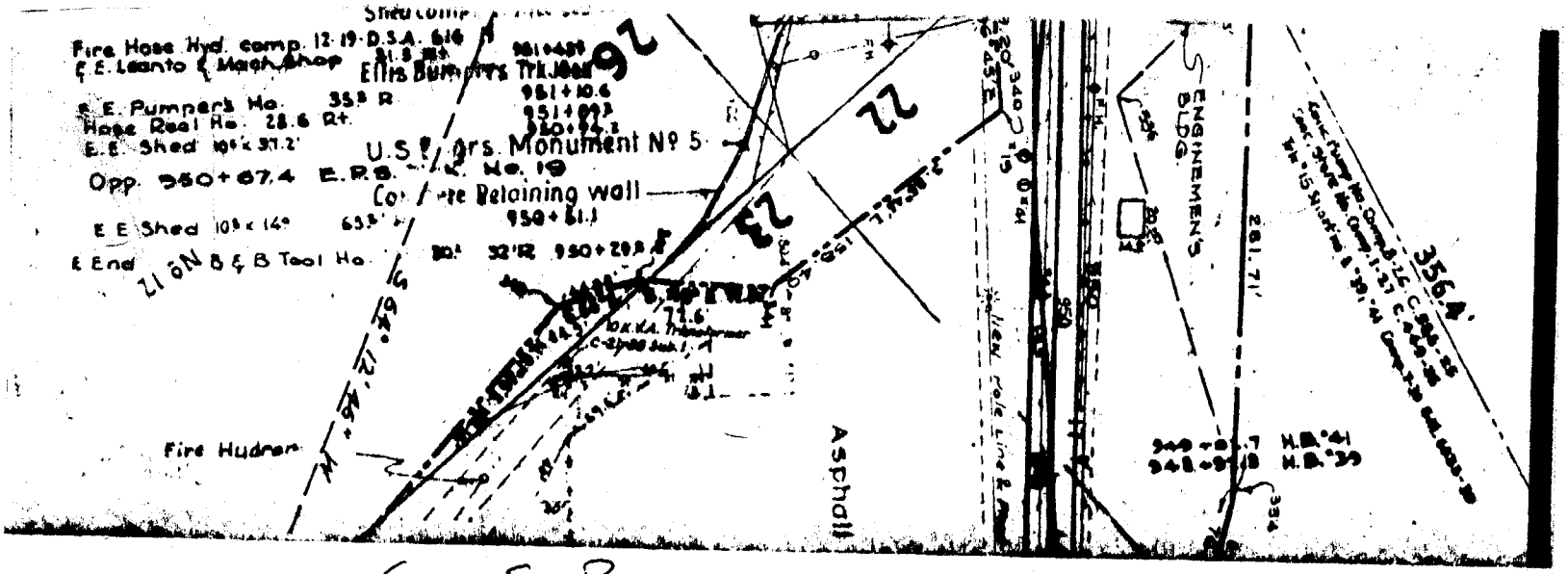
CHARTING RECOMMENDATION:

The pier should be charted as portrayed on the attached plan. No submerged ruins should be charted.

See Eval Supp to Invest 50560

RWD,


1" = 100'
S 84° 41' 38" W
336.19'
PIER
HEAD
LINE
N 53° 27' 22" E
92.66'
960 + 69.2
960 + 53.5
Red Light
2.952 Ac.
Lining device on slip comp. 3-22 Auth. C-812-22
CRANE
FREIGHT APR.
S 39° 00' 13" E
33.56'
965 + 62.0 Beg. spring line
Reinforcing Wharf Renewed 8-16 Auth. C
Freight Slip No. Rebuilt under Auth.
Point No. 9
Point No. 8
122.04'
N 51° 24' 44" E
61.41'
BULKHEAD
LINE
N 32° 31' 29" W
Air Whistle
953 + 00.2
952 + 88.8
962 + 82.0
Opp.
Enlarged 4-17 Auth. C-554-17
E.E. 10' x 34' Tank ⊄ 949 R.
⊄ 5' x 11' Vat 90' R.
⊄ 5' x 37 Vat 88' R.
E.E. 29' x 52' Pump Ho. 57' R
E.E. 6' x 20' Tank 99' Rt.
Conc Blanket under Train
27
Brine Tank
10' x 54' Water Tank on Conc.
52' CONC. PUMP HO.
20.5' x 6.6' Hydro-Pneumatic Tank
Fire Protection
Location of
Opp. 951 + 70.
Location of



SANTA FE PIER
@ Pt. RICHMOND.

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION FOR AWOIS ITEM 50560

AWOIS Item 50560 is a Y-shaped ferry slip at latitude 37°54'27.6"N, longitude 122°23'32.0"W, presently 75 meters shorter than indicated by H-7623.

Contact with the ATSF Railroad Company indicates that the pier was destroyed by fire, rebuilt, and all prior ruins removed. Based upon the ATSF Railroad Company project engineer's statement, the pier ruins transferred to H-9811 from H-7623 should be removed. The construction drawing provided by the hydrographer is not adequate for accurate charting due to a lack of geographic origin by which the pier may be referenced to the shoreline. Instead, it is recommended that the pier be charted as shown on TP-00526.

50161

CHART ~~# 18649~~, 18650, ~~& 18652~~ 37th Edition, April 17, 1982 ITEM # 50561

ITEM DESCRIPTION: Pile (Submerged)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983

INVESTIGATION DATE: March 23 & 24, 1983 (J.D. 082 & 083). VESSEL: RA-6

OIC: ENS Logue

REFERENCES: 125 meter sweep investigation around Berkeley Breakwater Light 2.

GEODETIC POSITION	Latitude	Longitude
Charted:	37° 50' 52.1"N.	122° 21' 34.1"W.
Observed:	Not Found	Not Found

POSITION DETERMINED BY:

Proximity to Third Order Geodetic Position, Berkeley Breakwater Light 2. ✓

METHOD OF ITEM INVESTIGATION:

The piling was searched for by wire drag. A 125 meter wire was connected to Berkeley Breakwater Light 2 such that it could pivot around the base of the light. The wire was held on the bottom at either end by 60 pound weights. A Jenson launch dragged the end of the wire and a 60 pound weight via a bridle attached at the extended end of the wire. The wire was dragged in both directions until the pier was encountered. The operation was supported by divers. No piling was found. (See attached diagrams). ✓

CHARTING RECOMMENDATION:

Delete the ~~dolphin~~ submerged pile and V-shaped pier ruins presently charted. Concur

RWP ✓

50562

ITEM INVESTIGATION

ITEM DESCRIPTION: 31' Sounding

CHART: ~~18649 and~~ 18650, 37th Edition, April 17, 1982

SOURCE: AWOIS, #50562

INVESTIGATION DATES: J.D. 080, 084

REFERENCES: Position No. 3110, 5th out and 3144

LOCATION:	Charted (31' sndg)	Observed (34' sndg)
	37/48/33.7N	37/48/33.5N
	122/27/29.5W	122/27/29.0W

POSITION DETERMINATION: Mini-Ranger

METHOD OF INVESTIGATION: A 50 meter spacing development was conducted over this area. The 31 foot sounding was disproved. A least depth of 34 feet was found. Additionally, a least depth of 39 feet was found 200 meters east of the 34 foot sounding. A leadline placed on this shoal determined it to be soft mud.

CHARTING RECOMMENDATION: Delete 31' sounding and chart least depth of 34 feet. Chart a 39 foot depth at 37°48'33.6"N and 122°27'21.3"W. (See field sheet RA-10-1A-83). Do not concur.

See Eval Supp to Invest 50562

RWS

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION FOR AWOIS ITEM 50562

AWOIS Item 50562 is an investigation to verify or disprove a 31-foot sounding charted at latitude 37°48'33.7"N, longitude 122°27'29.5"W. This sounding originates from H-7621 (1947) and was not found or disproven by H-9793 (1978). The results of this investigation are shown on the attached page-sized graphic (sheet 14 of 16).

A least depth of 33 feet was found during this investigation at latitude 37°48'33.5"N, longitude 122°27'29.0"W. This depth confirms the existence of this feature; however, the 50-meter line spacing is not sufficient to preclude the existence of a shoaler depth. Therefore, the 31-foot sounding is not considered disproven and has been brought forward to the smooth sheet from H-7621.

This investigation was compared with H-9793 (1978). The soundings from this investigation agree very well with those on H-9793 except for several small shoal features which have been missed by the narrow beam fathometer used on H-9793. Although H-7621 (1947) had been superseded by H-9793, several of these features have been carried forward from H-7621 to this investigation. Depth curves in the junction areas with H-9793 are in agreement. This investigation, as supplemented by several soundings from H-7621, is adequate to supersede H-9793 for the area of common coverage.

This investigation was compared with Chart 18650, 37th Edition, April 17, 1982. Charted information originates from H-7621, H-9793 and unknown sources.

Except for a 35-foot sounding at latitude 37°48'38"N, longitude 122°27'34.0"W, which is AWOIS item 50563, charted data agrees well with this investigation. This sounding is disposed of in the discussion of the investigation of AWOIS item 50563.

This investigation supersedes the charted information within the area of common coverage.

9

50563

ITEM INVESTIGATION

ITEM DESCRIPTION: 35 ft sounding

CHART: ~~18649 and~~ 18650, 37th Edition, April 17, 1982

ITEM SOURCE: AWOIS #50563

INVESTIGATION DATES: JD 080 and 084

OIC: ENS Koehler

REFERENCES: Least depth positions #3114, 1st out 3131, 5th out

LOCATIONS:	Charted 35'	Observed 70'	Least Depth 37'
	37/48/38.0 N	37/48/38.~~5~~ 0 N	37/48/3~~4~~.5 0 N
	122/27/34.0 W	122/27/3~~4~~.0 3 W	122/27/31.5 W

POSITION DETERMINATION: Mini-Ranger

INVESTIGATION METHOD: A 50 meter spacing development was conducted. Depths were ~~70~~ 62 feet at the charted location of the 35 foot depth. A 3~~7~~6 foot depth was found 100 meters southeast of the charted sounding.

CHARTING RECOMMENDATION: Delete 35' sounding and chart a least depth of 3~~7~~6 feet at 37°48'3~~4~~.5"0 N, 122°27'31.5" W. (See field sheet RA-10-1A-83). See Eval Supp to Invest 50563

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION FOR AWOIS ITEM 50563

AWOIS Item 50563 is an investigation to verify or disprove a 35-foot sounding charted at latitude 37°48'38.0"N, longitude 122°27'34.0"W. This sounding was reported by the Corps of Engineers in 1972 and not found on H-9793 (1978). The results of this investigation are portrayed on a page-sized graphic (sheet 14 of 16).

The charted 35-foot sounding was not found nor was there any indication of its existence at the charted location. The 31-foot sounding, AWOIS Item 50562, is part of a large feature extending northwest towards the charted 35-foot sounding. The charted 35-foot sounding should be deleted and the area charted according to this survey.

50564

OPR-L123-RA-83

CHART #18650, ~~18649, and 18652~~ 37th Edition, April 17, 1982

ITEM DESCRIPTION: Light (on dolphin) (submerged ruin)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983, Item #50564

INVESTIGATION DATE: March 22, 1983, LTJG Mathwig

POSITION: 37°51'13.72"N, 122°28'36.99" W

INVESTIGATION METHOD:

The pile's position is close to the Horizons Restaurant built on a pier. The owner and long time resident, Ron MacAnnan, (558 Bridgeway, Sausalito, California 94965, Tel. No. 415 331-3232) was personally contacted. Mr. MacAnnan stated that the lighted dolphin once marked the end of a pier, both of which were removed by the Army Corps of Engineers shortly after WWII. Mr. MacAnnan states that many boats constantly use the area and have never come into contact with any obstruction, and also that fishing boats often drag their nets over the area and have not snagged an obstruction.

CHARTING RECOMMENDATION:

Delete the dolphin presently charted. Concur

5-05-65

OPR-L123-RA-83

CHART #18649 ~~and 18652~~ 49th Edition, April 10, 1982

ITEM DESCRIPTION: Dolphin (submerged)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983
Item #50565

INVESTIGATION DATE: March 22, 1983, LTJG Mathwig
April 15, 1983, SST Hastings

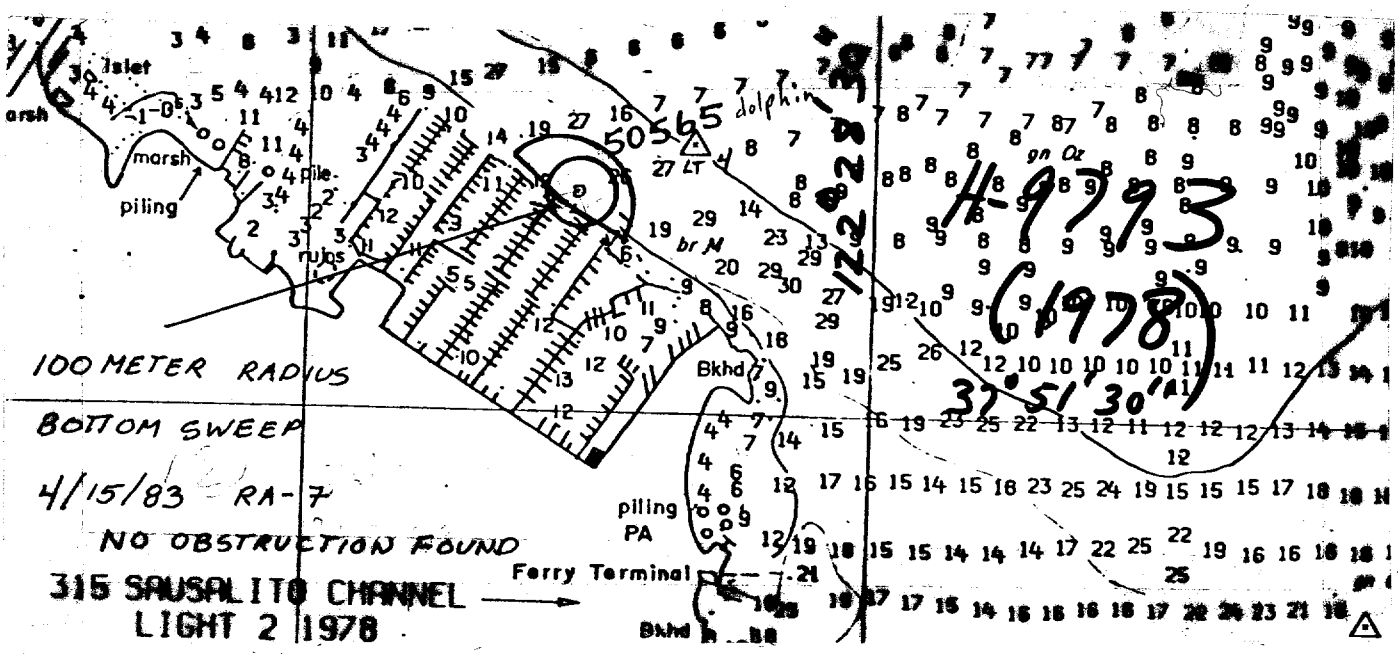
POSITION: 37°51'39.28" N, 122°28'45.74" W

INVESTIGATION METHOD:

The dolphins position is slightly seaward of the Sausalito Yacht Harbor. Herb Madden (Telephone # 415 332-5000), owner of the Sausalito Yacht Harbor, was personally contacted. Mr. Madden states there are no submerged obstructions outboard of his marina. The area experiences constant traffic without any contact with an obstruction. As the marina was expanded, no construction equipment came in contact with an obstruction at the position. ✓

On April 15, 1983 ship's divers made a 100 meter radius bottom sweep off the end of the pier nearest the dolphins position and no obstruction was found. See sketch. ✓

CHARTING RECOMMENDATION: Delete the dolphin presently charted. Concur



Rec'd ✓

50566

OPR-L123-RA-83

CHART #18650, ~~18649, and 18652~~ 37th Edition, April 17, 1982

ITEM DESCRIPTION: Pile (submerged)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983
Item #50566

INVESTIGATION DATE: March 22, 1983, LTJG Mathwig
April 18, 1983, ENS Postle

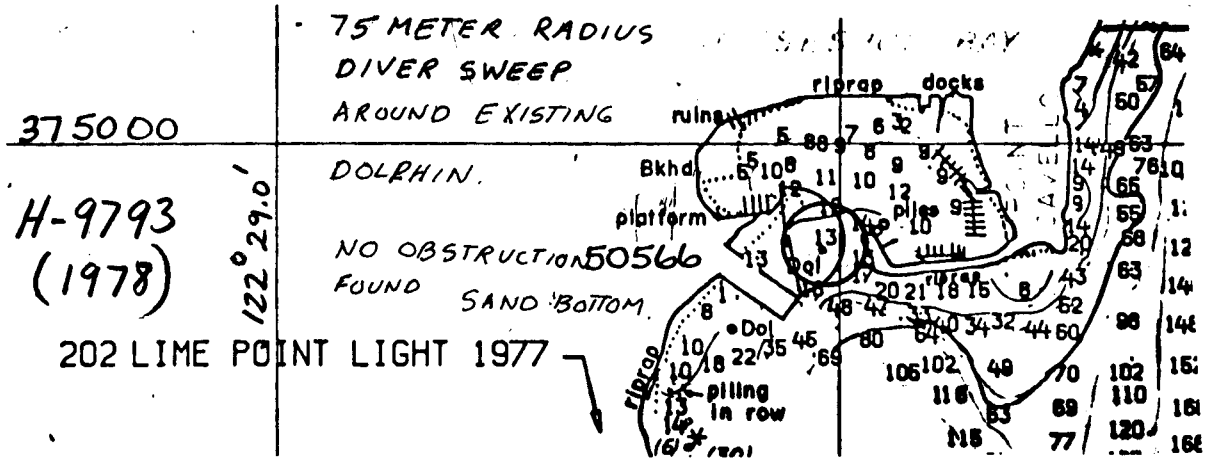
POSITION: 37°49'55.3" N, 122°28'31.2" W

INVESTIGATION METHOD:

The pile's reported position lies in the center of the entrance to Horseshoe Bay and 50 meters east of a visible dolphin. Located in the bay is the Presidio Yacht Club. The Secretary-Custodian of the yacht club, Mrs. Ray Camp, and a long time member, John Lax, were personally contacted. Both state that all portions of the entrance to the bay are used extensively by club members and no one has come into contact with any submerged obstruction. ✓

On April 18, 1983 ship's divers made a 75 meter radius bottom sweep from the visible dolphin at 37°49'55.3" N, 122°28'32.8" W, and found no obstructions. See sketch. ✓

CHARTING RECOMMENDATION: Delete the pile presently charted. Concur



RWD

50567

ITEM INVESTIGATION

CHART #18650, ~~18652, and 18654~~ 37th Edition, April 17, 1982

ITEM #50567

ITEM DESCRIPTION: Submerged Obstruction

SOURCE: AWOIS

INVESTIGATION DATE: JD 77, 86, 87

OIC: ENS Logue, ENS Judson, LT Ludwig

REFERENCES: Position No.'s 5000-~~5145~~ 5045, 4145-~~4186~~ 4173, 4174-~~4186~~ 4226, ~~5000-5145~~

GEODETIC POSITION: Charted: 37°50'~~12.6~~ 10.0" N, 122°28'~~10.80~~ 08.5" W

POSITION DETERMINED BY: Range-Azimuth and Range-Range

METHOD OF ITEM INVESTIGATION: A development was run over the area at 1:5,000 scale. Sounding lines were run at 25 meter spacing in two directions. ✓

The five foot reported in LNM 7/79 is considered disproved. Survey depths were 80 to 100 feet and it is most likely that the 200 yards "estimated distance" from Yellow Bluff was misjudged. Concur

The most definitive work in this area was done on survey H-3968 WD (1936). The 5 and 6 foot rocks determined by that survey are considered to still exist. A 6 foot depth was found by echo sounder on the current survey which verifies H-3968. Concur, however H7621 and H9793 positions of rock confirm FE242 position. ✓

The 4 foot depth from prior survey H-7621 which was reported as a side echo with questionable control is considered disproved by the present survey. Depths in this area were 20-25 feet. Concur

CHARTING RECOMMENDATION: These rocks have been troublesome to chart as noted by the "Inspector" at the San Francisco field station in 1936. This area has been surveyed numerous times, most definitively and adequately on survey H-3968 WD (1936). It would be very difficult to repeat such work in that area. It is recommended that a dangerous submerged rock be charted 100 meters from Yellow Bluff at 37°50'12.60" N, 122°28'10.80" W. Hopefully, such a symbol will keep the prudent mariner from navigating close to this point. A statement has been made for inclusion in the Coast Pilot concerning a dangerous submerged rock 100 meters from Yellow Bluff. See Eval Supp to Invest 50567

OK

RWD ✓

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION FOR AWOIS ITEM 50567

AWOIS Item 50567 is an investigation of a submerged obstruction east of Yellow Bluff Light. It is presently charted as an obstruction, covered five feet, reported in 1979, at latitude 37°50'10"N, longitude 122°28'08.5"W. The results of this investigation are shown on the attached page-sized graphic (sheet 15 of 16).

An echo sounder search at 25-meter spacing in both east-west and north-south directions was accomplished yielding a 6-foot depth at latitude 37°50'12.0"N, longitude 122°28'11.1"W. This location is very near to the 5-foot minimum depth found on H-7621 (1947) and the 7-foot depth found on H-9793 (1978). It is also less than 50 meters south of the 5- and 6-foot rocks found on H-3698WD (1936). Since 25-meter spacing is not likely to yield a minimum depth, a rock submerged 5 feet at latitude 37°50'12.0"W, longitude 122°28'11.2"W has been carried forward from H-7621 to this investigation. The chart should be revised to depict a rock submerged 5 feet at latitude 37°50'12.0"N, longitude 122°28'11.2"W.

5 Rk

RWD,

50568

OPR-L123-RA-83

CHART ~~#18649~~, 18650, ~~and 18652~~ 37th Edition, April 17, 1982

ITEM DESCRIPTION: Submerged pier ruins

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983
Item #50568

INVESTIGATION DATE: March 22, 1983, LTJG Mathwig and J.D. 105
Pos. 6279-6294

POSITION: 37°50'36.68" N, 122°28'28.13" W

INVESTIGATION METHOD:

The position for the submerged ruins lie offshore of the Marin County Sausalito Sanitation Station. Bill Dabner (Telephone # 415 332-0240), Sanitation District Supervisor, was personally contacted. Mr. Dabner states that in 1956 the 566 Engineer Corps from Fort Baker dismantled the old pier using divers with pneumatic chain saws. ✓

The dive investigation on survey H-9793, PSR-10, located nearshore ruins extending to Pos. 300 at 37°50'~~33~~37.33" N, 122°28'32.43" W and swept the bottom area 50 m beyond Pos. 300. ✓

Range/Azimuth hydrography was run at 25 meter spacing over the area offshore of Pos. 300 on H-9793. No indication of obstructions was found. (See Expansion 7). ✓

CHARTING RECOMMENDATION:

Chart submerged ruins extending to 37°50'37.33" N, 122°28'32.43" W as determined during survey H-9793 (1978), PSR #10 Pos. 300. Delete the charted ruins extending offshore from Pos. 300.

See Eval Supp to Invest 50568

RWD

EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION FOR AWOIS ITEM 50568

AWOIS Item 50568 is charted pier ruins at latitude 37°50'36.68"N, longitude 122°28'28.13"W. It was searched for at 25-meter line spacing with no indication of the charted obstructions. The hydrographic echosounder search is shown on the page-sized graphic following the discussion of AWOIS No. 50567 (sheet 15 of 16).

Neither the 25-meter line spacing investigation nor the 1978 dive investigation have disproven the existence of the ruins shown on Chart 18650, 37th Edition, April 17, 1982. The dive investigation on H-9793 (1978) continued beyond Pos. 300 along the axis found for the inshore ruins. The pier as located on H-7621 (1947) bends south at approximately Pos. 300 and extends beyond the limits of the search. The submerged pier ruins have been transferred from H-7621 onto H-9793 and should continue to be charted as shown on Chart 18650, 37th Edition, April 17, 1982. The feature has not been carried forward to the present survey and, accordingly, has not been superseded by the present survey. The data from this investigation supplements H-9793 within the area of common coverage.

50569

OPR-L123-RA-83

CHART #18649, ~~18652~~ 49th Edition, April 10, 1982

ITEM DESCRIPTION: V-Shaped Ferry Slip (ruins)

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983
Item #50569

INVESTIGATION DATE: March 23, 1983, LTJG Mathwig

POSITION: 37°52'18.00" N, 122°27'08.0" W

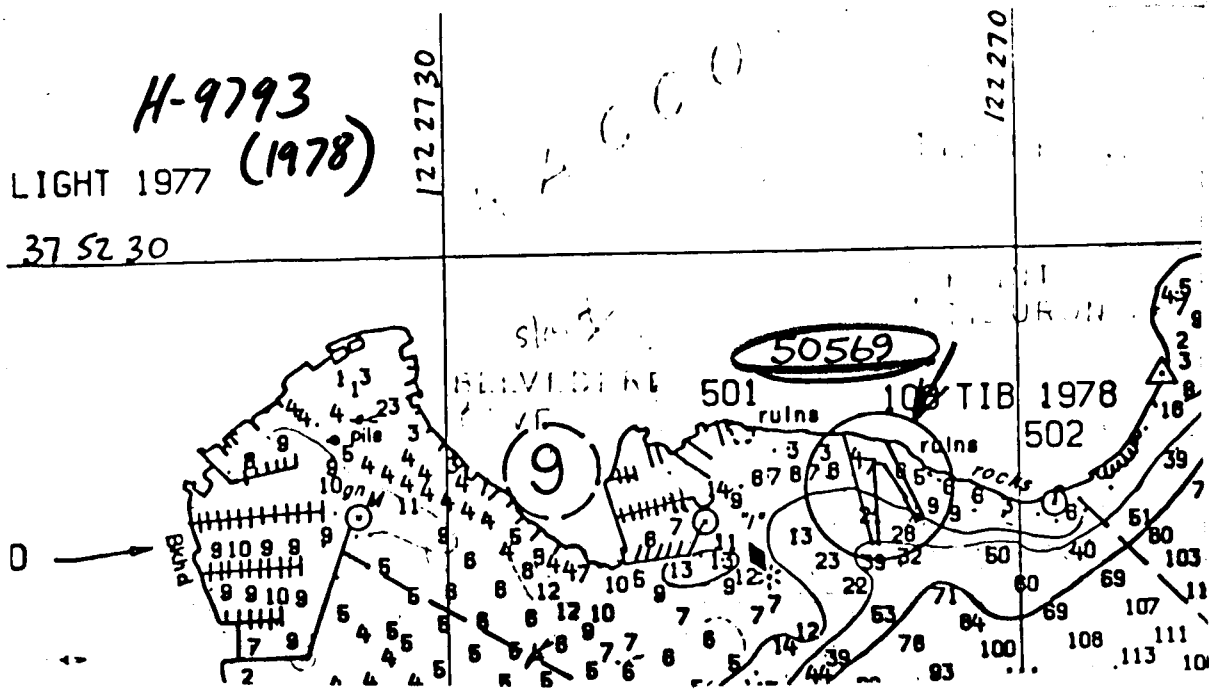
INVESTIGATION METHOD:

The item is the old Tiburon Ferry Slip. Harold Quam (Telephone # 454-7011), an engineer with Ghilotti Bros. Construction Company in San Rafael, was personally contacted. Mr. Quam states that his company pulled all of the piles several years ago.

During survey H-9793 (1978) sounding lines were run over the location of these ruins.

During the present survey, sounding lines were run at this location in conjunction with PSR Item 9 and no indication of submerged ruins was found. (See Item 9).

CHARTING RECOMMENDATION: Delete the pier ruins presently charted. See Eval Supp to Enwert 50569



EVALUATION SUPPLEMENT TO FE-242 ITEM INVESTIGATION FOR AWOIS ITEM 50569

AWOIS Item 50569 is charted pier ruins at latitude 37°52'18"N, longitude 122°27'08"W. See the page-sized graphic (sheet 8 of 16) for sounding lines in the area of this feature.

The hydrographic lines over the location of this ruins accomplished during H-9793 (1978) and this investigation did not confirm the existence of the pier ruins nor did it disprove their existence. The statement cited from Mr. Quam, an engineer from the firm that removed the piles several years ago, does not preclude the continued existence of ruins. Submerged pier ruins have been brought forward to this survey from H-7704 (1948-51). This feature should remain as charted on Chart 18649, 49th Edition, April 10, 1982.

Telephone conversation with Mr. Quam by the Operations Section, N/CG241, on November 13, 1985, indicated his assurance that all the piles had been removed some 13 years ago with use of a barge crane. Most of the piles were still intact and have been reused or sold. Piles that had broken were below the mud line. No pier decking was involved. The gates and safety rails had all been salvaged. The Operations Section believes that Mr. Quam's testimony is adequate for removal of the charted ruins.

Robert W. DeLazaviain

I concur with the recommendation made by the Operations Section. Remove the charted ruins.

Dale E. Hathaway
N/CG 241
11/13/85

50570

ITEM INVESTIGATION #: 50570 Project No. OPR-L123-RA-83

ITEM DESCRIPTION: Pile

SOURCE: NOS Wreck and Obstruction Information System, March 4, 1983

INVESTIGATION DATE: April 1, 1983 (JD 091) Vessel No. 2125

OIC: ENS Kenneth W. Barton

REFERENCES: Position No. 5069*

*Position number indicates the center of the area searched.

GEODETIC POSITION:	Latitude	Longitude
Charted:	37°54'22" N	122°22'22.7" W
Observed:	Not Found	

POSITION DETERMINED BY: Range/Azimuth and Check Azimuth

METHOD OF ITEM INVESTIGATION:

The pipe was searched for using a 50 m line drag in a circle sweep method. The end of the line at the center of the search was located and marked with a 50 lb. weight. The weight was positioned at 37°54'22.05" N, 122°22'22.85" W. The extended end of the line was dragged by divers in a circle about the weight. No pipe was found. ✓

CHARTING RECOMMENDATION: Delete pipe presently charted. Concur.

Chart 18649, 49th Edition, April 10, 1982
This pipe is shown on H9811 (1979) as a submerged pipe transferred from H7623 (1947). It is disproven and should be removed from the chart.

RWD

50572

CHART #18650, ~~18649, 18652~~ 38th Edition, December 17, 1983

ITEM DESCRIPTION: Sunken fishing vessel.

SOURCE: OPR-L123-RA-83, Change No.2
AWOIS #50572

INVESTIGATION DATES: JD 105, 108

VESSEL: RA-3

POSITIONS: JD 105: 2646 - 2710
JD 108: 2711 - 2775

INVESTIGATION METHOD: The wreck reported at position 37°49'29.50"N, 122°26'29.50'W was investigated using a Klein side scan sonar. Side scan sonar lines were run at 200 percent bottom coverage. The towfish was deployed from the stern of the launch. The water depth in the area varied between 50 and 90 feet. All side scan sonar lines were run using the 100 meter range scale with a line spacing of 50 meters. A 20° beam width and 20° down angle was used to obtain the best sonar return. On JD 105 the launch used range/azimuth positioning method, employing computer program FA 181. On JD 108 the launch used range/range positioning method (logger) with computer program FA 181. The Ross fathometer was operated during the investigation. The launch towing speed varied between 3 knots (900 rpm) and 4 knots (1200 rpm). A position plot for this investigation is included on RA-10-1A-83. No significant contacts appeared during the side scan search. ✓

CHARTING RECOMMENDATION: The existence of the sunken fishing vessel is considered disproved with this side scan sonar investigation. The reported position of the wreck is near Alcatraz Shoal, an area characterized by strong currents and a shifting bottom. It is likely that the vessel has broken apart and is covered with sediment, as indicated by the prior dive investigation. If any wreckage exists it does not present a hazard to navigation in the area and therefore should not be charted. (See Field Sheet RA-10-1A-83 for side scan sonar plot). Concur

Echo sounder data for the search is shown on the page sized graphic sheet 16 of 16.

RWD

ATTACHMENT TO DESCRIPTIVE REPORT FOR FE-242

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

David W. Yeager 9/20/85
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

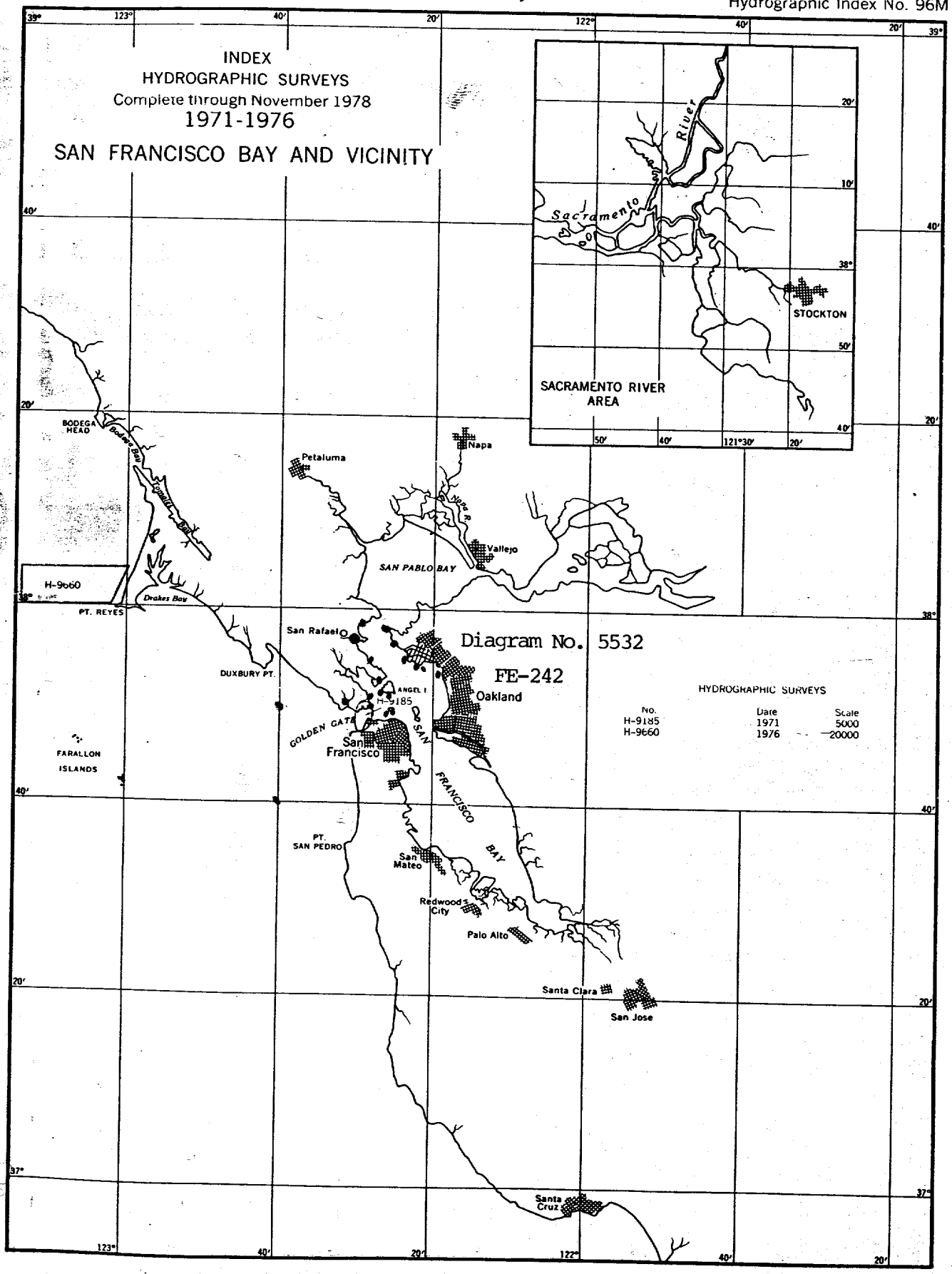
N/MOP2:LWMordock 9/25/85

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Robert L. Faulkner 9/27/85
Director, Pacific Marine Center (Date)

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 96M



ITEM INVESTIGATION #4

CHART #: 18649, 18652

ITEM DESCRIPTION: Provide soundings along the pier at Molate Point as described.

SOURCE: Change No. 1 to OPR-L123-RA-83 Item Investigation #4.

INVESTIGATION DATES: 30 March 1983 & 1 April 1983.

POSITIONS:	Pos. No.'s	JD	VESNO
	6125-6134	089	2126
	6214-6223	091	2126

INVESTIGATION METHOD: Sounding lines were run, as prescribed on Item #4 chartlet, using Range-Azimuth or Range-Range control. When compared with survey H-9811 all soundings agree within 1-2 feet. The H-9811 pier representation is in error, a catwalk, instead of the full pier width, extends to the north. The lights are on the corners of the pier. There is no longer a catwalk on the south end of the pier, connecting to the mooring dolphin (Position No. 6223, JD 091). Three new dolphins, not on the prior survey or chart, were positioned; located at 37° 56' 49.09" N 122° 25' 32.76" W, 37° 56' 51.04" N 122° 25' 33.1" W, and 37° 56' 49.98" N 122° 25' 32.99" W (position No.'s 6132-6134, JD 089). For an accurate representation of the Point Molate pier area see RA-10-1B-83. Included in the survey records is an Army COE post-dredge survey of the Point Molate pier. There are discrepancies between the RA-10-1B-83 depths and this survey most likely due to silting which has occured since the post-dredge survey date, May - June 1982.

See Eval Supp to Invest No. 4

CHARTING RECOMMENDATION: The charted pier should be changed to show the true shoreline representation of the pier, see RA-10-1B-83. The three dolphins, previously mentioned should be charted. The RA-10-1B-83 soundings in the vicinity of Point Molate pier are considered adequate and sufficient to update all prior surveys and the chart.

See Eval Supp to Invest No. 4

122° 26′ 30″ | 122° 26′ 00″ | 122° 25′ 30″

37° 58′ 30″

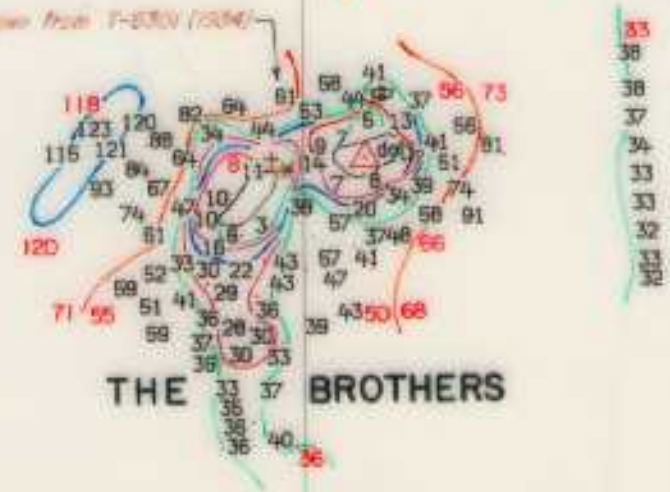
FE-242
PSR NO. 1 and 2
Scale 1:10,000

JOINS H-10080 (1983)

37° 58′ 00″

117 EAST BROTHER ISLAND LIGHT, 1981

*dol



ADJOINS H-9811 (1979)

37° 57′ 30″

SHEET 1 OF 16

FE-242
PSR NO. 3 and 4
Scale 1:10,000

ADJOINS H-9811 (1979)

37° 57′ 30″

POINT ORIENT

obstruction
cov 3 ft at MLLW

37° 57′ 00″

MOLATE POINT

dols

dol

ADJOINS H-9811 (1979)

37° 56′ 30″

122° 26′ 00″ | 122° 25′ 30″ | 122° 25′ 00″

cht 18653rd Ed

SHEET 2 OF 16

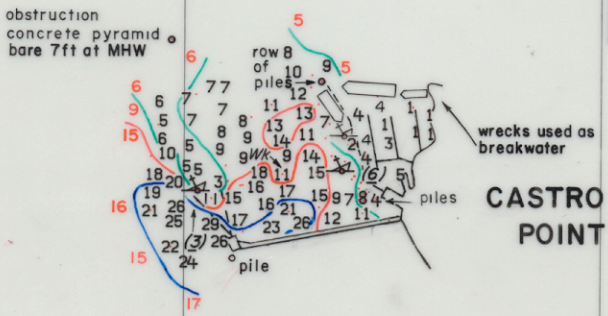
122° 25' 00"

122° 24' 30"

37° 56' 30"

37° 56' 30"

FE-242
PSR NO. 5
Scale 1:10,000



37° 56' 00"

37° 56' 00"

ADJOINS H-9811 (1979)

37° 55' 30"

37° 55' 30"

SHEET 3 OF 16

FE-242
PSR NO. 7
Scale 1:10,000

37° 55' 00"

37° 54' 30"

37° 54' 00"

POINT POTRERO

Richmond Harbor
Channel Light 9

Richmond Harbor
Channel Light 10

ADJOINS H-9811 (1979)

122° 23' 00"

122° 22' 30"

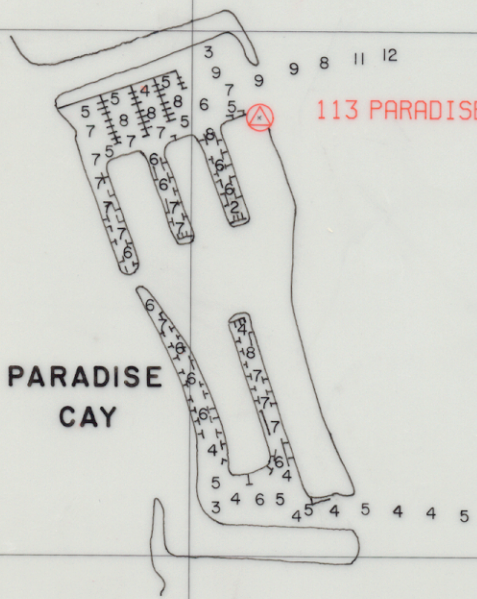
122° 22' 00"

SHEET 4 OF 16

122° 28'30" 122° 28'00" 37° 55' 30"

FE-242
PSR NO. 8
Scale 1:10,000

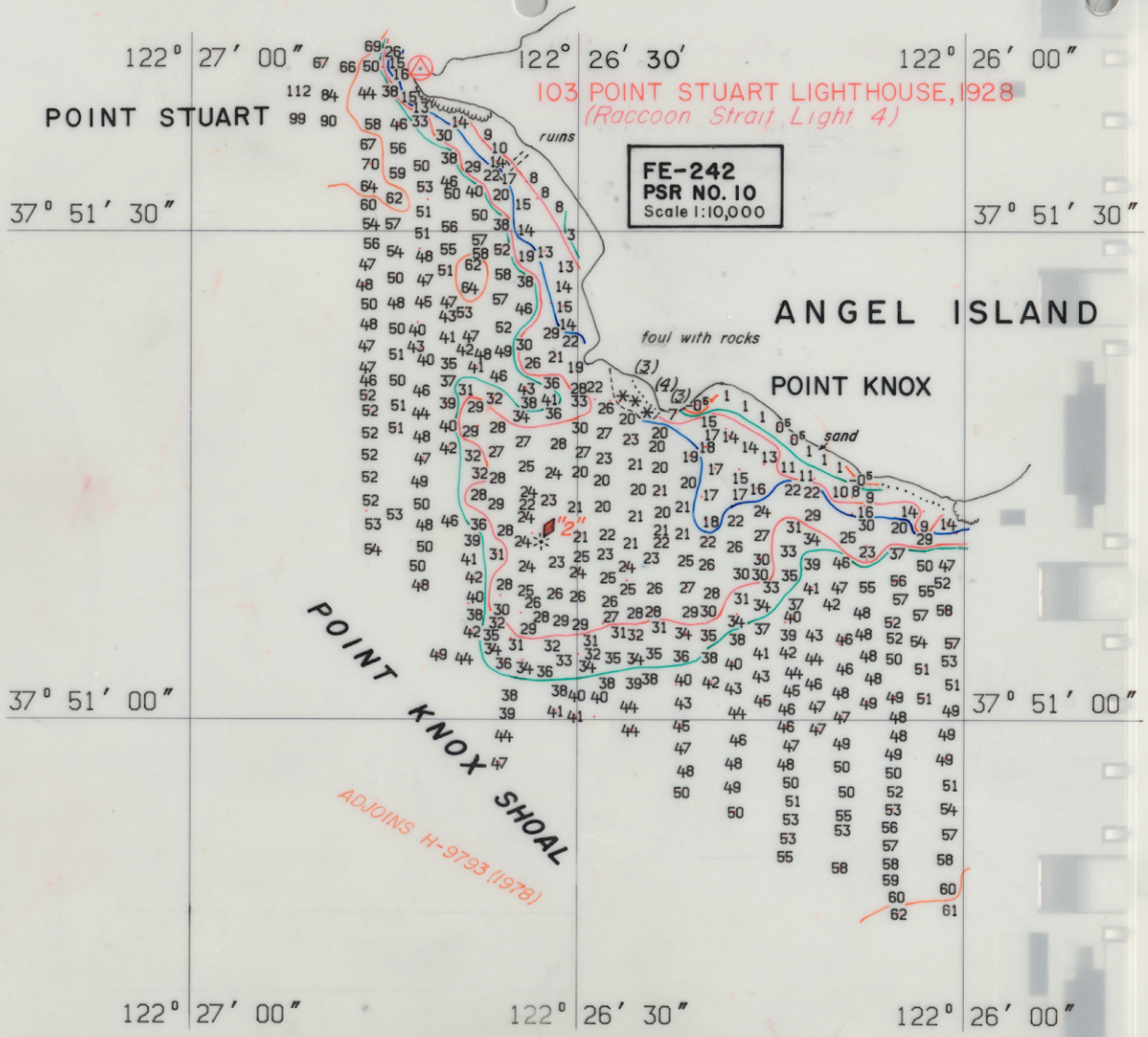
37° 55' 00"



37° 54' 30"

18653 #L

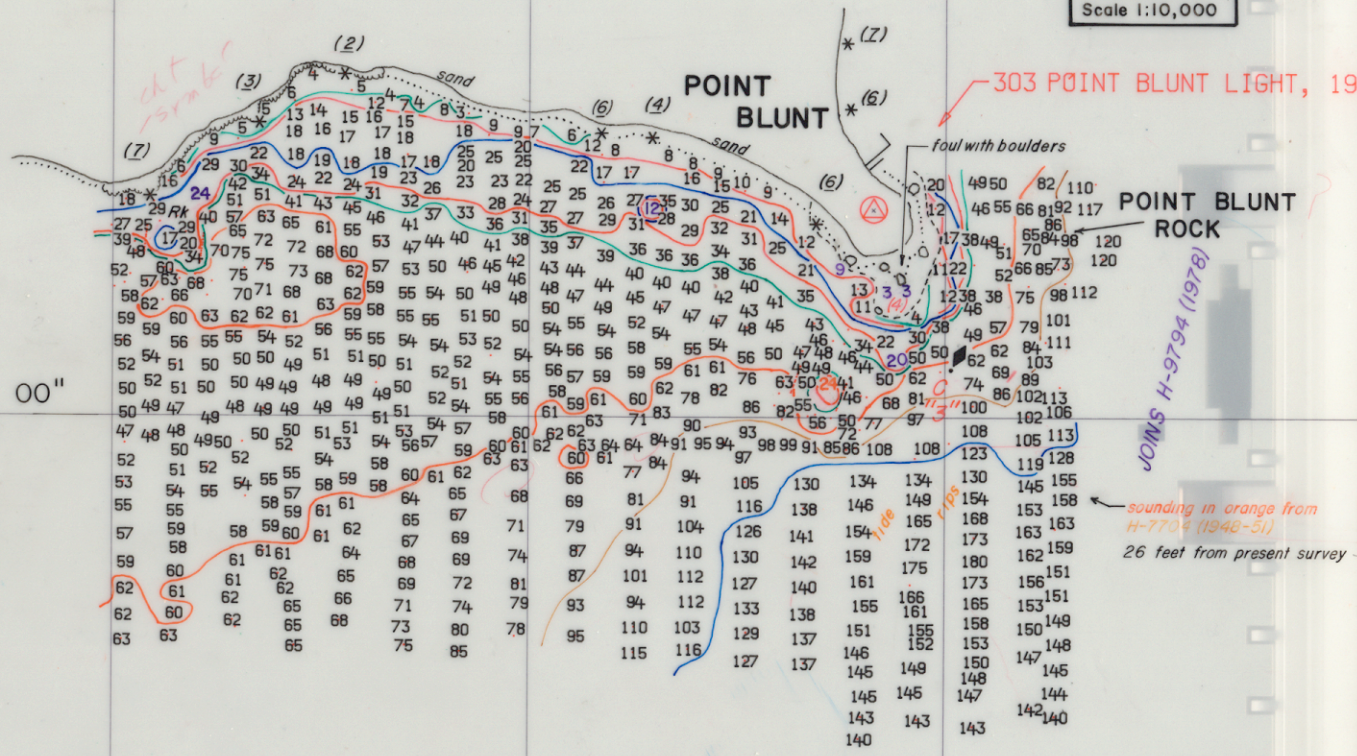
SHEET 5 OF 16


122° 27′ 00″
122° 26′ 30′
122° 26′ 00″
37° 51′ 30″
37° 51′ 00″
POINT STUART
103 POINT STUART LIGHTHOUSE, 1928
(Raccoon Strait Light 4)
ruins
FE-242
PSR NO. 10
Scale 1:10,000
ANGEL ISLAND
foul with rocks
POINT KNOX
sand
"2"
POINT KNOX SHOAL
ADJOINS H-9793 (1978)

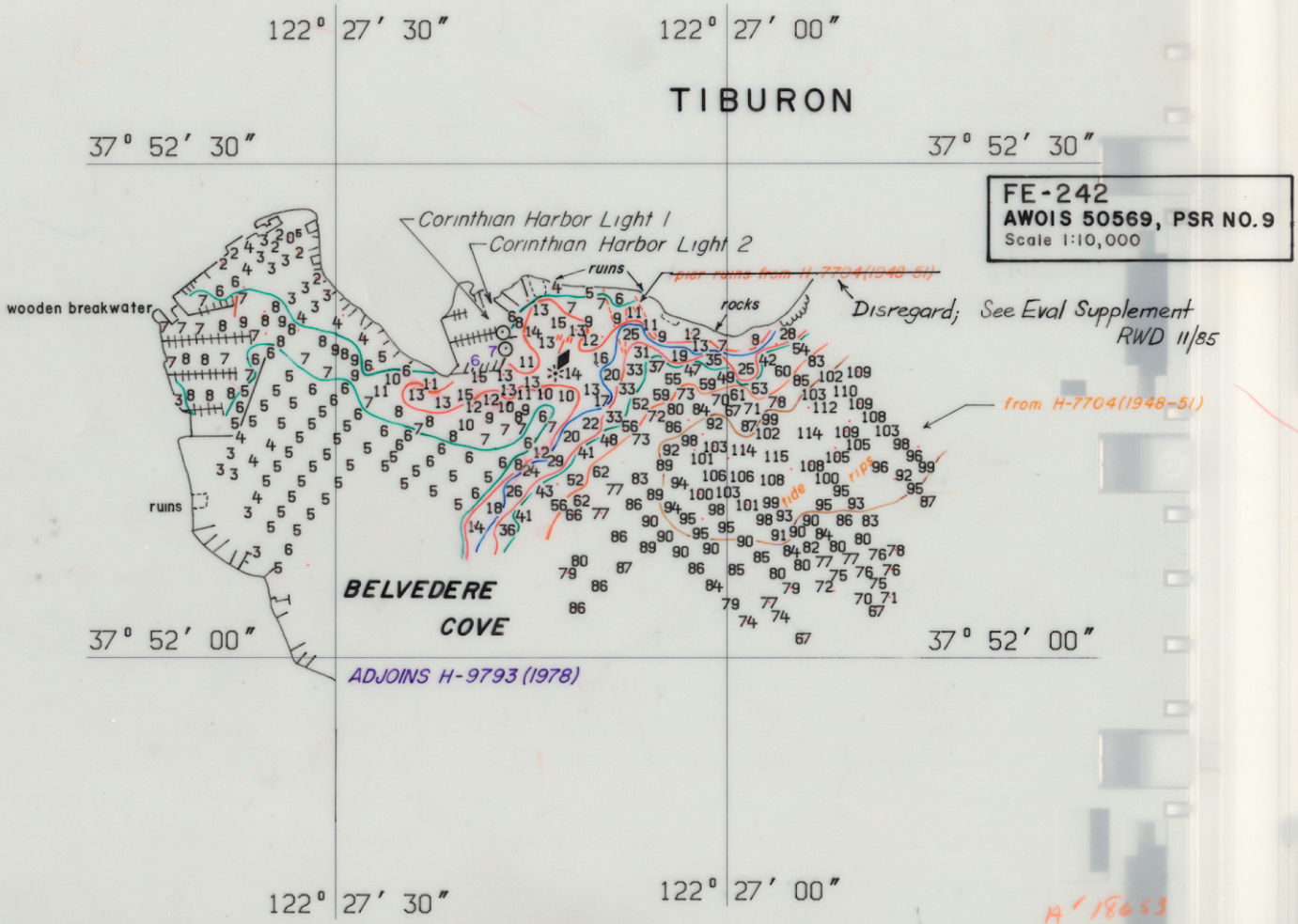
SHEET 6 OF 16

ANGEL ISLAND

FE-242
PSR NO. 10
Scale 1:10,000



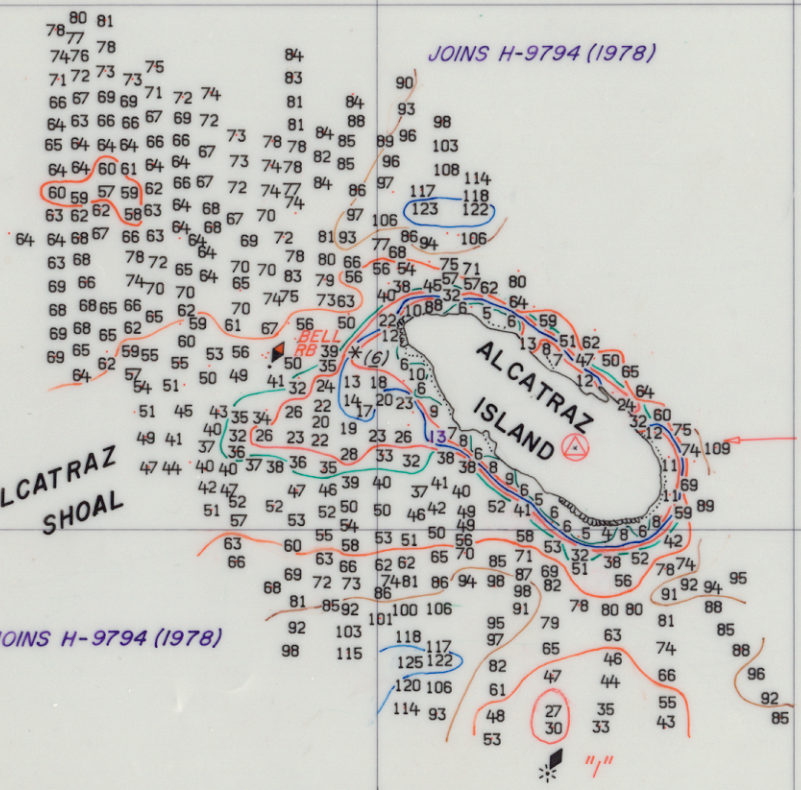
SHEET 7 OF 16



SHEET 8 OF 16

H 10653

FE-242
AWOIS 50571, PSR NO. 11
Scale 1:10,000



37° 50' 00"

37° 49' 30"

122° 26' 00"

122° 25' 30"

122° 25' 00"

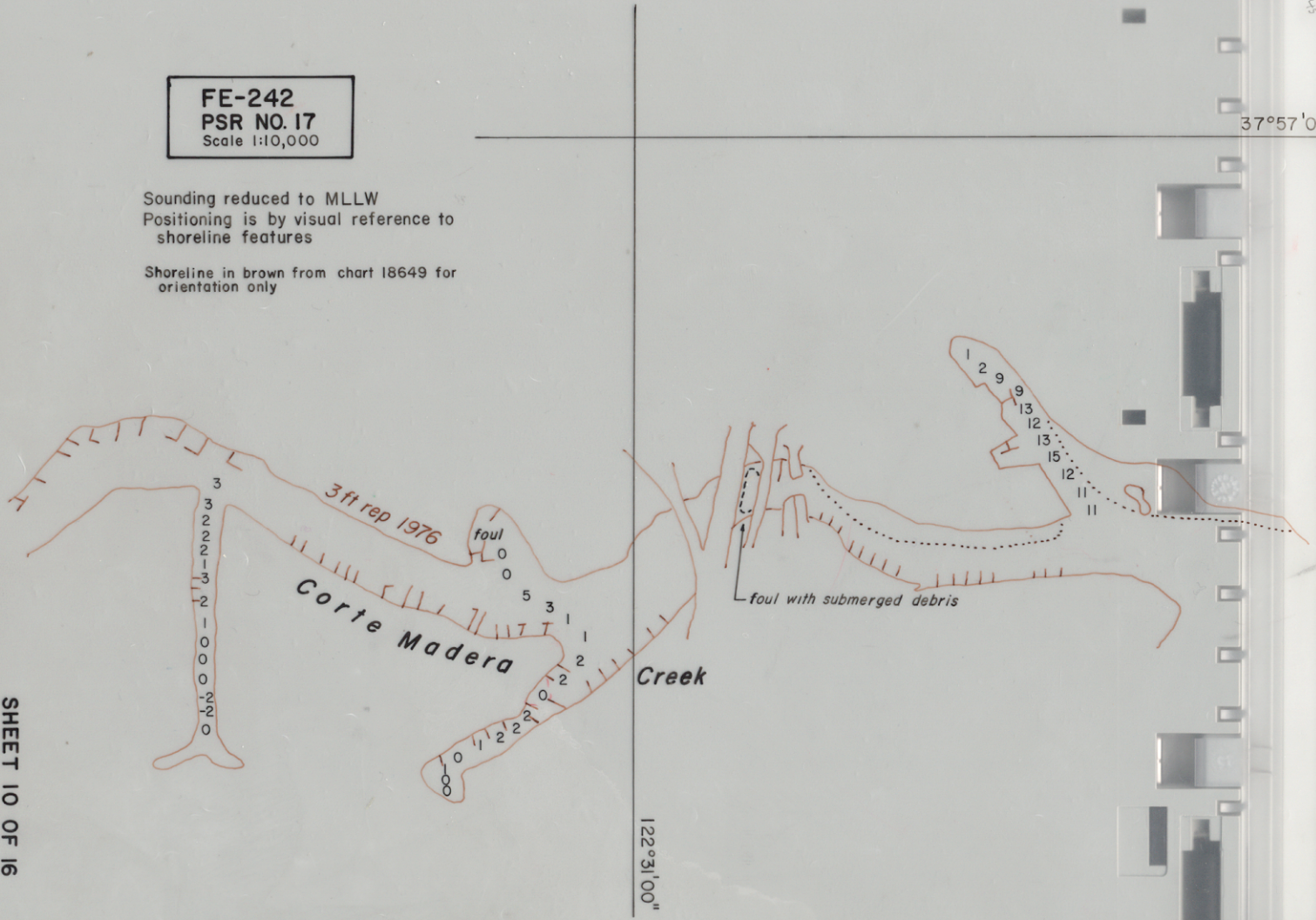
122° 24' 30"

SHEET 9 OF 16

FE-242
PSR NO. 17
Scale 1:10,000

Sounding reduced to MLLW
Positioning is by visual reference to shoreline features

Shoreline in brown from chart 18649 for orientation only

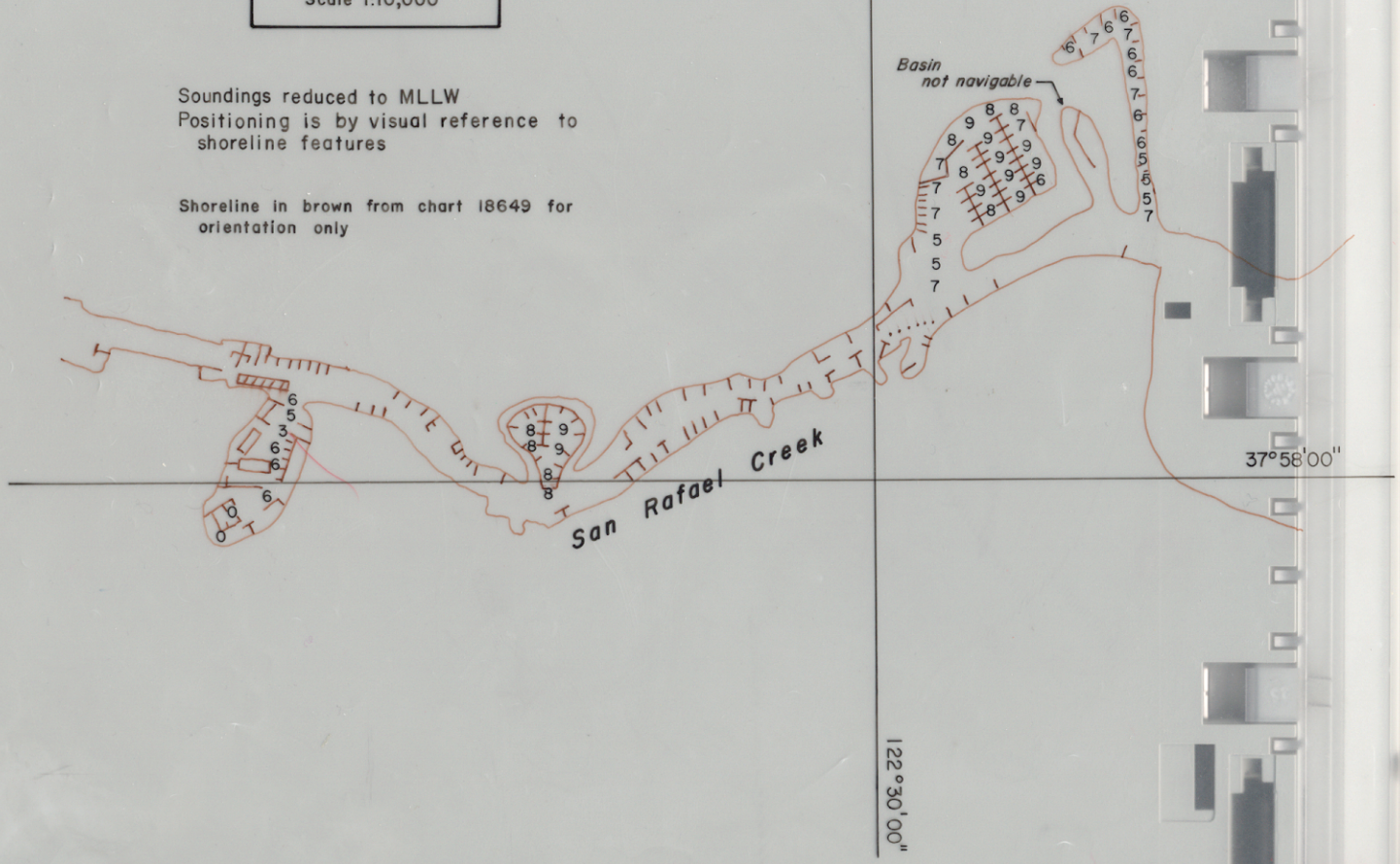


SHEET 10 OF 16

FE-242
PSR NO. 18
Scale 1:10,000

Soundings reduced to MLLW
Positioning is by visual reference to shoreline features

Shoreline in brown from chart 18649 for orientation only

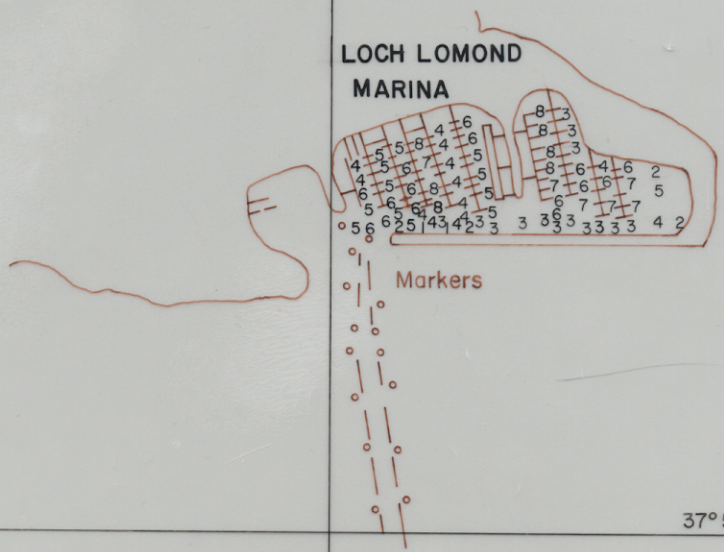


SHEET 11 OF 16

FE-242
PSR NO. 18
Scale 1:10,000

Soundings reduced to MLLW
Positioning is by visual reference to shoreline features

Shoreline in brown from chart 18649 for orientation only



37°58'00"

122°29'00"

SHEET 12 OF 16

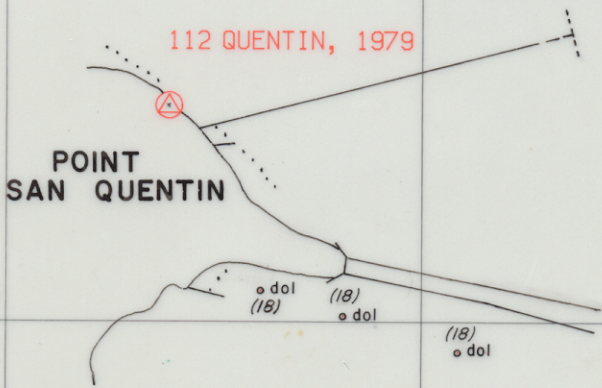
122° 29' 00"

122° 28' 30"

122° 28' 00"

37° 57' 00"

FE-242
AWOIS 50557, 50558 and 50559
Scale 1:10,000



37° 56' 30"

37° 56' 00"

SHEET 13 OF 16

FE-242
AWOIS 50562 and 50563
PSR NO. 12 and 13
Scale 1:10,000

37° 49' 00"

PRESIDIO SHOAL

ADJOINS H-9793 (1978)

soundings from H-7621 (1947)

37° 48' 30"

ruins
TIDE STATION
pipe
(5)
outfalls
outfalls
pipe
(8)
subm pile
cov 8 ft MLLW
pile (concrete)
(6)

209 TURK, 1948 RM 1

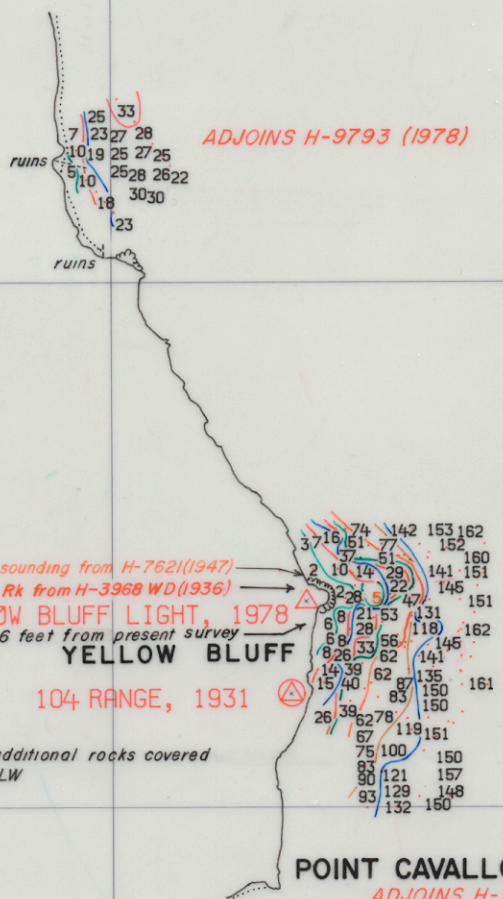
offneed

122° 28' 00"
122° 27' 30"
122° 27' 00"

14-21

37° 51' 00"

FE-242
AWOIS 50567 and 50568
Scale 1:10,000



37° 50' 30"

37° 50' 00"

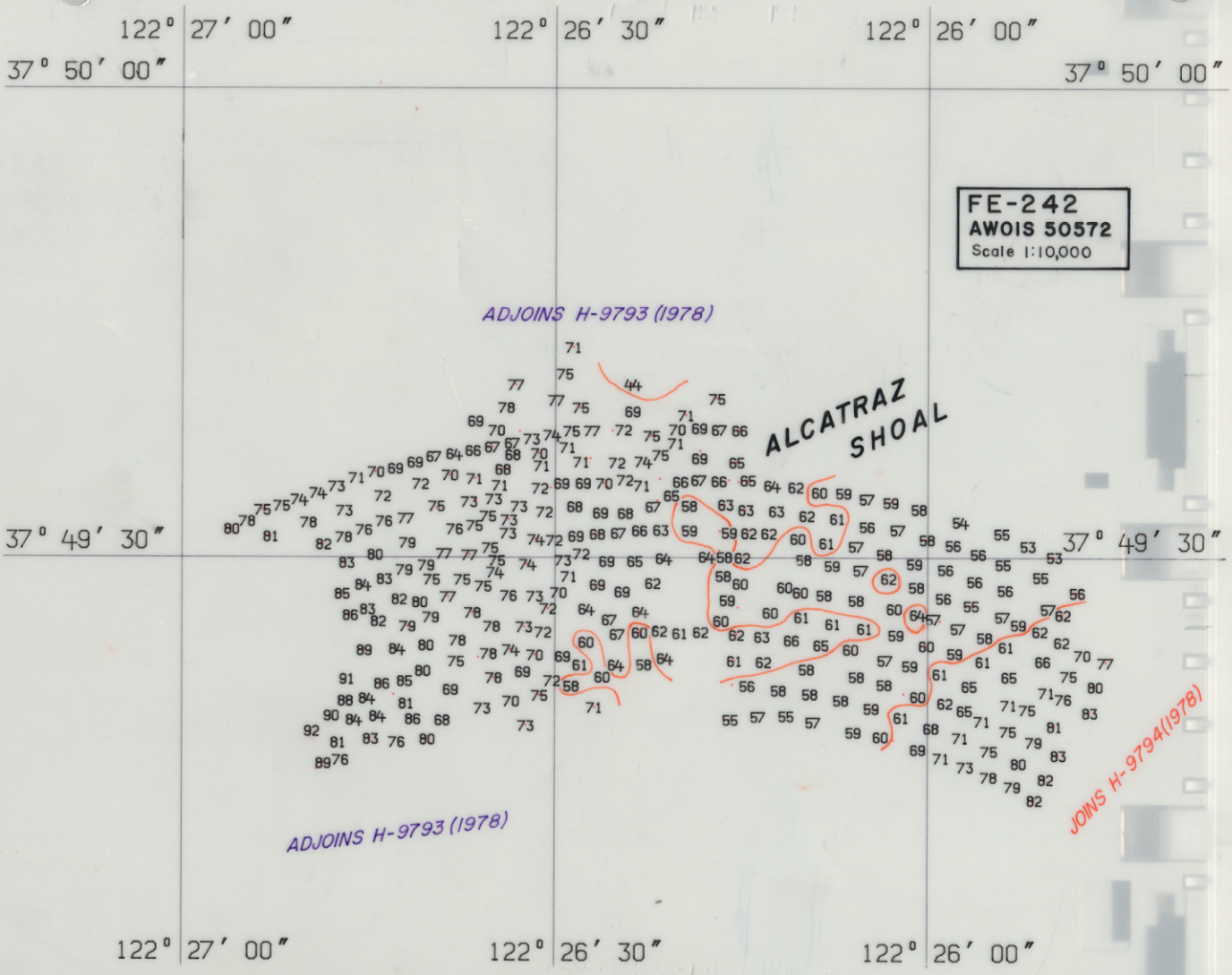
122° 29' 00"

122° 28' 30"

122° 28' 00"

DF 18653 ck'd report

SHEET 15 OF 16



SHEET 16 OF 16

NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-242

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
18649	5/7/86	D. Conetto	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 66
18653	9/23/86	N.R. Meyers	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. #1 new chart
18650	2/6/87	Pearce Hunt	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 57
18652'B'	5/9/88	Pearce Hunt ww	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29
18652'C'	5/9/88	Pearce Hunt ww	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29
18652'A'	5/9/88	Pearce Hunt ww	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29
18652D	5-19-88	Pearce Hunt ww	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 29
18654	4-17-90	Tracy Sanford	~~Full~~ ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 49 APPLIED THRU CHART 18649 DRWG #68
18650	11-18-92	Thomas J. Finn AMN	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 62 Reapplied Sheet 14
18649	11-19-92	Thomas J. Finn AMN	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 71 Reapplied Sheet 14 thru chart 18650 dwg # 62
18652'B'	11-19-92	Thomas J. Finn AMN	Full
			Dwg # 32 Reapplied Sheet 14 thru chart 18650 dwg # 62

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED